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VOL. XXXIII. CHICAGO, ILL., APRIL, 1918 No. 4

Original Articles

THE ATTIC OF THE MIDDLE EAR; ITS SUPPURATIVE CONDITIONS.*

OTTO T. FREER, M. D.

CHICAGO.

Some knowledge of the acute and chronic suppurations of the attic of the middle ear is of importance to all physicians, for they should be able to tell when an acute middle ear suppuration is of the dangerous type that has invaded the attic and is hence liable to lead to mastoiditis, while by an understanding of the nature of chronic attic suppuration they could counteract the too frequently given advice, that nothing but a radical mastoid operation, with its usual result of partial or nearly complete deafness of the affected ear, will save patients with chronic attic suppuration, although, as a matter of fact, most such cases get well under local treatment with or without the help of minor operations.

Anatomy of the attic: The intricacy of the anatomical structure of the attic, due to the complex of pockets and compartments created by the ossicles, their ligaments and accompanying mucous membrane folds, has made the understanding of the topography of the attic so difficult that a number of the foremost otologists have, since 1847, felt impelled to devote much study to the subject and the researches of Helmholtz, Prussak, von Tröltsch, Politzer, Siebenmann, Schwalbe, Merkel, Kretschmann and most recently in 1910, Marie Köbele on the impulse of Kümmel have all combined to give as clear a picture as possible of the puzzling and varying anatomy of the attic.

In the nomenclature the attic is called the recessus epitympanicus. It is also spoken of as the epitympanum, the aditus, and cavum epitympanicum. Convenience has made the term attic the usual designation.

The attic is divided into an outer and inner compartment by the superior incudo-malleolar fold. The outer compartment is called the pars cupularis, cupula (German, Kuppelraum), malleo-incudal-squamous space (German, Hammer-Amboss-Schuppenraum) external attic (Politzer).

The attic extends downward to the level of the horizontal part of the Fallopian canal and to the tendon of the tensor tympani muscle. Below this level lies the mesotympanic portion of the tympanic cavity. The long diameter of the attic is a continuation of the axis of the Eustachian tube projected through the cavum tympani.

The roof of the attic is the tegmen tympani, its major inner part being derived from the petrous portion of the temporal bone, only a narrow strip externally belonging to the squamous portion. In childhood the fissura petro-squamosa separates the petrous from the squamous portion, vessels and connective tissue being transmitted from the dura into the cavum tympani through this fissure.

A transverse curved ridge (crista transversa tympani) on the under surface of the tegmen gives attachment to a mucous membrane fold descending to the tendon of the tensor tympani muscle (Fig. 1, A, T.), called the tensor fold.

The inner wall of the attic belongs to the pars petrosa and is formed of the compact bone of the capsule of the labyrinth. In its posterior part it contains the facial nerve in the Fallopian canal and, posteriorly and above the facial nerve, the horizontal semicircular canal, the location of both of these structures being indicated by bulges into the attic.

The external wall of the attic is formed by the squamous portion of the temporal bone, the superior wall of the external auditory meatus

*Read before the Chicago Medical Society, Feb. 20, 1918.

bending abruptly upwards at its innermost end, the inner surface of the corner so made (plate of the external auditory meatus, Sexton) forming the outer wall of the attic and being hollowed into a niche to contain the malleo-incudal body. (Logette des osselets, Gelle), (Fig. 1, L.) Below, the attic wall terminates in the smooth, rounded edge of the incisura tympanica, also called margo tympanicus (incisura Rivini), this smooth edge representing the open space in the incomplete ring of the tympanic bone (Fig. 2), which forms in early childhood the annulus tympanicus. The incisura tympanica gives attachment to the membrana flaccida (Shrapnell's membrane), (Fig. 3, F; Fig. 4, S; Fig. 9, S), and is not grooved as is the bony frame of the pars tensa of the membrana tympani formed by the tympanic bone. The membrana flaccida forms the outer boundary of Prussak's space (recessus membranæ tympani superior), (Fig. 4, P.) and so becomes part of the outer boundary of the attic in the instances where Prussak's space opens into the attic, as it often does (Fig. 7, L.).

The attic is bounded anteriorly by the tendon

Figure 1. View into the attic from above and behind after removal of the tegmen tympani and upper part of the inner wall of the tympanic cavity down to the footplate of the stapes, opening the vestibule V and showing the first turn of the cochlea. The division of the attic into an outer one, L, and an inner one internal to the malleo-incudel body is shown; L, external attic showing its external wall hollowed to form the niche of the ossicles; S, superior ligament of the malleus and superior incudal ligament blended; A, tensor tympani fold descending from the transverse ridge of the tegmen tympani to the tendon of the tensor tympani muscle, with aperture at A connecting inner attic with the tubal part of the tympanic cavity (pars sellaris). T, tensor tympani tendon; I, stapes fold with the fold of the chorda tympani, C, helping to form a partial floor for the inner attic. C, chorda tympani and chorda fold attached to the long process of the incus; M, stapedius muscle; F, facial nerve. Original drawing from a specimen from the collection of Dr. W. G. Reeder.

of the tensor tympani muscle, by the crista transversa of the tegmen tympani which lies vertically above the tensor tympani tendon and transversely under the tegmen tympani and by the tensor fold which consists of a number of

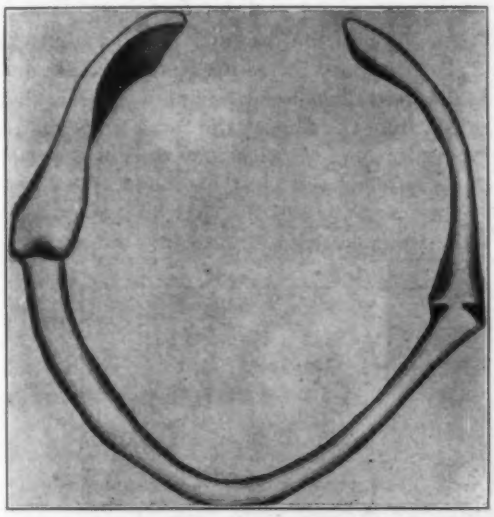

Figure 2. Tympanic bone (annulus tympanicus). After Politzer.

variable transverse folds of mucous membrane (Fig. 1, A; Fig. 7, O.) that unite the tensor tympani tendon to the crista transversa, so creating a screen which lies partly across the long axis of the attic. This screen is not complete, an aperture remaining (Fig. 1, A.) which connects the attic with the tensor tympani and tubal part of the tympanic cavity, or pars sellaris as it is also called.

Posteriorly the attic merges into the antrum tympanicum without distinct boundary, the antrum proper beginning at the short process of the incus. (Fig. 1, P; Fig. 5, X; Fig. 6, B, B′.)

The floor of the attic lies at a higher level than its lower boundary and is formed by the malleus and incus joined to make the malleo-incudal body and by the ligaments and mucous membrane folds holding these bones in place. (Fig. 6.)

The ligaments of the malleus are: 1. The ligamentum mallei superius which ascends from the peak of the head of the malleus to the roof of the attic. (Fig. 1, S; Fig. 5); 2, the axial ligament of Helmholtz which is composed of two bands, one of them a strong tendinous one, the ligamentum mallei anterius (Fig. 6, L.), extending from the spina tympanica posterior of the annulus tympanicus to the neck of the malleus; the second, the ligamentum mallei laterale (Politzer) or posterius (Helmholtz), extending from the external wall of the attic to the neck of the malleus. (Fig. 6, E.) This ligament is the check against excessive external rotation of the malleus. Fibrous strands extending between these two ligaments to the margo tympanicus are called the ligamentum mallei externum; 3, the ligamentum petrotympanicum of the malleus is a fourth ligament that represents the remains of the processus longus of the malleus (Meckel's cartilage), (Fig. 7, T.) absorbed in early childhood, and extends from the head of the malleus through the fissura petrotympanica or Glaserian fissure, sometimes even into the maxillary articulation.

The incus possesses the ligamentum incudis posterius (Fig. 6, B, B′), which attaches the

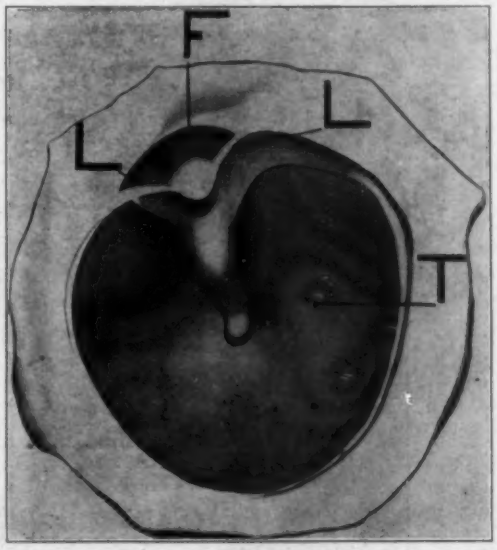

Figure 3. The tympanic membrane. F, membrana flaccida (Shrapnelli); L, L, anterior and posterior gray lines showing anterior and posterior limits of the membrana flaccida and the anterior and posterior boundaries of the posterior and anterior malleolar folds; T, pars tensa of the membrana tympani. After Politzer.

short process of the incus to the recess in the posterior wall of the tympanic cavity which lies just below the entrance to the antrum tympanicum. This ligament consists of two bands extending outwardly and inwardly.

Between the upper surface of the malleo-incudal body and the tegmen tympani, extending backward for a variable distance from the ligamentum mallei superius, is found the ligamentum incudis superius. (Fig. 1, S; Fig. 8, S.) It is not a true ligament, but a mucous membrane fold and it separates the attic longitudinally into an internal attic (Fig. 1; Fig. 6) and an external one called the pars cupularis or malleo-incudal squamous space. (Fig. 1, L; Fig. 6, F; Fig. 4, A, E; Fig. 5, Fig. 8.) The superior incudal ligament reaches, in some cases, as far back as the entrance to the tympanic antrum (Fig. 8, S), in other cases being merely indicated (Fig. 1). No ligaments connect the malleus or incus with the inner wall of the attic, but variable mucous membrane folds are often extended between them, especially the so-called chorda fold and stapes fold, a partial floor for the inner attic being thus formed with an aperture or apertures of variable size leading into the mesotympanum. (Fig. 1, C. I.)

The floor of the external attic (Fig. 6, L, E, F.) is formed by the ligaments described and by the lateral malleolar and incudal folds that extend from the malleus and incus to the margo tympanicus or just below it to the inner surface of the membrana flaccida. As shown by Politzer, if these folds blend, the floor of the external attic is complete and it opens into the tympanic

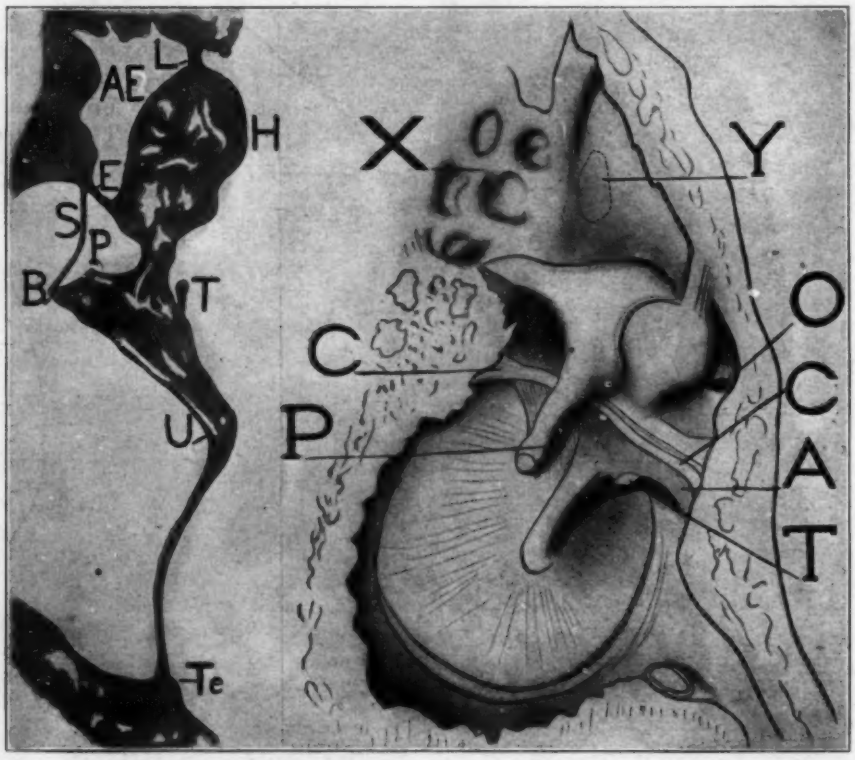

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Figure 4. Section through the malleus, the membrana tympani and the external attic. H, head of the malleus; Te, annulus tendineus of the membrana tympani; B, processus brevis mallei; U, umbo; T, chorda tympani; L, ligamentum mallei superius; E, ligamentum mallei externum; S, membrana flaccida (Shrapnelli); AE, external attic; P, Prussak's space. After Politzer.

Figure 5. View of the membrana tympani, malleus, incus and external attic from within. C, C, chorda tympani; A, anterior malleolar fold; T, attachment of tendon of the tensor tympani muscle; Y, dotted line showing the position of the outlet of the external attic into the meso-tampanum when a gap exists between the external malleolar and external incudal folds; O, anterior outlet of attic into mesotympanum found in some cases; P, posterior malleolar fold; X, the external wall of the antrum tympanicum. After Merkel.

antrum, having only an indirect communication with the mesotympanum through the inner attic, so that if this communication is blocked, pus in the external attic would be liable to be dammed back into the tympanic antrum and the mastoid cells and would have to escape externally by perforation of the membrana flaccida or above it under the margo tympanicus. If a gap (Fig. 5, Y.) exists between the external lateral folds of the milleus and incus, the external attic can drain directly into the mesotympanum.

In close connection with the floor of the external attic below are the three pockets or recesses of the membrana tympani, the posterior and anterior pockets of von Tröltsch and the superior pocket of Prussak or Prussak's space. These pockets are called respectively in the nomenclature, the recessus membranæ tympani posterior, anterior and superior. The anterior and posterior pockets represent the space between the pars tensa of the membrana tympani and folds arising from its anterior, superior and posterior superior attachments, these folds being duplicatures of the substantia propria of the membrana tympani and called the plica malleolaris anterior (Fig. 5, A; Fig. 9, A.) and posterior (Fig. 5, P; Fig. 7, F; Fig. 9, P.) in the nomenclature, but for convenience they are commonly called the anterior and posterior folds.

The recessus membranæ tympani superior, or Prussak's space (Fig. 9, S; Fig. 4, P; Fig. 7, L.) is bounded externally by the membrana flaccida, inwardly by the neck of the malleus and below by the processus brevis of the malleus. Its anterior and posterior boundaries are visible by direct inspection of the membrana tympani (Fig. 3, L, L.) and appear as two grayish lines forming a V that extend from the anterior and posterior limit of the margo tympanicus above to the processus brevis below. The anterior and posterior gray lines indicate where the anterior and posterior pockets lie against Prussak's space. (Fig. 3, L, L; Fig. 9.) According to Kretschmann, Prussak's space is roofed by a layer of the membrana flaccida which separates from the vertical external layer of the membrane and extends downward and inward until it reaches the spina capitis mallei. Kretschmann states that this roofing membrane may split off from the membrana flaccida either at the margo tympanicus or just below it, in the latter case placing the floor of the external attic lower than the margo tympanicus, so that in case of suppuration of the external attic the pus would escape above Prussak's space which would then not be involved in the abscess. If the membranous roof of Prussak's space is attached to the margo tympanicus the pus must discharge through Prussak's space. The roof of Prussak's space helps to form the floor of the external attic. Politzer represents the ligamentum mallei externum as the roof of Prussak's space. (Fig. 4, E.)

As described by Prussak and confirmed by Marie Köbele, Prussak's space may open posteriorly into the external attic above the posterior pocket (described below) of the membrana tympani. (Fig. 7, L.) In this case Prussak's space forms a part of the pars cupularis or external attic. As Marie Köbele has shown Prussak's space may also open through the posterior malleolar fold into the mesotympanum by way of the posterior pocket, Prussak's space then being a part of the mesotympanum, not of the attic and unaffected by attic suppuration.

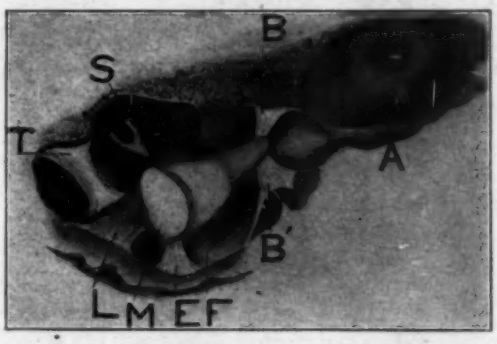


Figure 6. The attic opened from above showing the ligaments of the malleus and incus. M, head of the malleus; L, ligamentum mallei anterius; E, ligamentum mallei externum; F, external attic and external malleolar fold; B, inner, B', outer part of the posterior ligament of the incus; T, tendon of the tensor tympani muscle contained in the tensor fold; S, inner attic with stapes; A, antrum tympanicum. After Politzer.

The plica malleolaris posterior (posterior fold) (Fig. 5, P; Fig. 7, F; Fig. 9, P.) is attached above and in front to the gray line separating the membrana flaccida from the pars tensa of the membrana tympani posteriorly. Posteriorly and above, the plica malleolaris posterior is attached to the bony grooved rim of the pars tensa of the membrana tympani, but arises from a separate bony ridge. Descending from these attachments

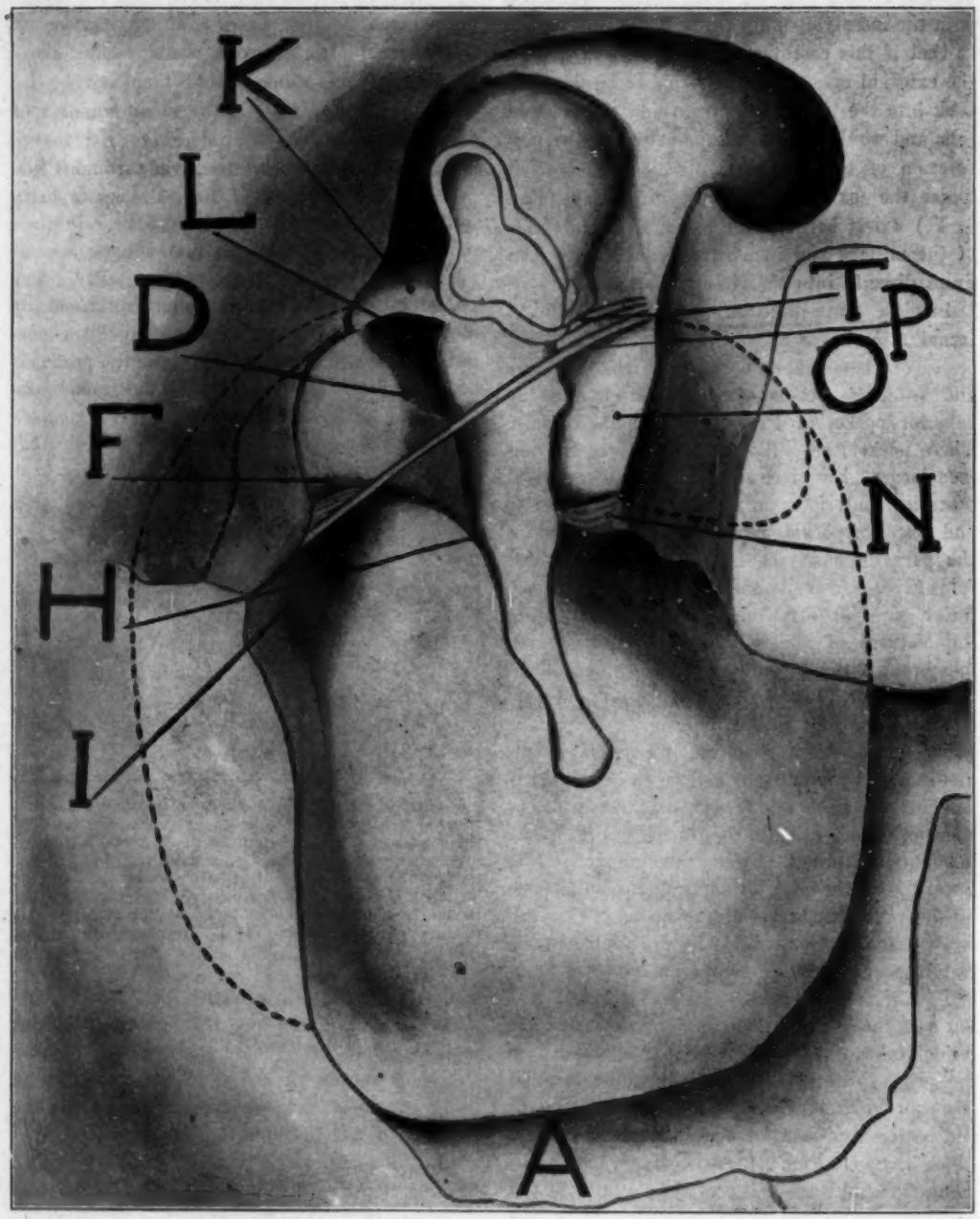


Figure 7. Drawing showing outlet of Prussak's space into external attic. From Prussak's original article written in 1867 with first description of Prussak's space. The incus has been removed. The malleus is turned towards the observer so that he looks at its articular facet; A, floor of the tympanic cavity; D, apex of processus brevis; F, posterior malleolar fold; H, its lowest point of attachment to the manubrium mallei; I, entrance to the posterior recessus membranae tympani; (posterior pocket of von Tröltsch); K, roof of Prussak's space, (recessus membranae tympani superior); L, entrance to Prussak's space above the posterior malleolar fold; N, tendon of the tensor tympani muscle; O, tensor fold forming the tensor cul de sac over the tympanic orifice of the Eustachian tube; P, plica malleolaris anterior with the chorda tympani nerve along its free border; T, ligamentum petrotympanicum.

parallel to the membrana tympani the posterior fold unites with the posterior surface of the manubrium mallei. (Fig. 7, H; Fig. 5, P.) The arched free border of the fold looks downward and usually contains the chorda tympani nerve. The space between the posterior fold and the membrana tympani is called the recessus membranæ tympani posterior, is the posterior pocket mentioned and opens downward into the mesotympanum. (Fig. 7, I.)

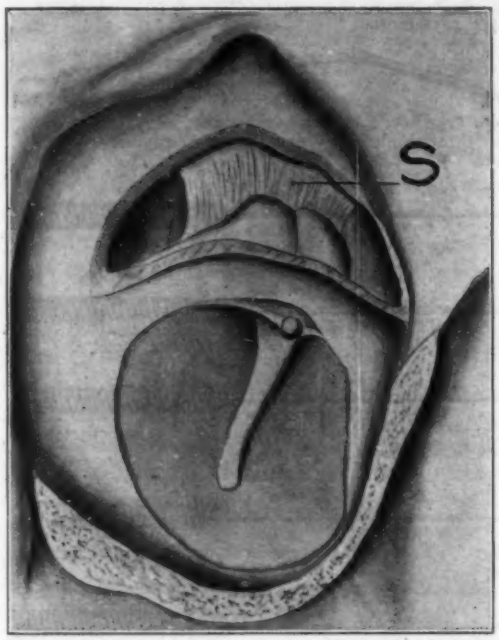


Figure 8. The attic opened from without by cutting away its external wall above the margo tympanicus. S, superior malleolar and incudal ligaments arising from the incudo-malleolar body and attached above to the tegmen tympani, dividing the attic into an outer and an inner attic. After Zuckerkandl.

The anterior pocket, recessus membranæ tympani anterior, is created by the anterior fold (plica malleolaris anterior). This fold is also a duplicature of the tunica propria of the membrana tympani extended between the ligamentum petro-tympanicum (remains of the processus longus of the malleus) (Fig. 5, A; Fig. 7, P.), the anterior angle of the neck of the malleus and the anterior angle of the processus brevis and blends with the membrana tympani along an upward and forward extending line reaching from the anterior limit of the margo tympanicus to the place of insertion of the ligamentum petro-tympanicum.

The anterior pocket has the form of a triangle with the apex above. It is smaller than the posterior one and opens downward and forward into the mesotympanic cavity; the free border of the plica malleolaris anterior contains the chorda tympani. The arteria tympanica anterior and the fibrous extension of the processus longus of the malleus also enter into the formation of the anterior fold and, with the chorda, pass out of the tympanic cavity through the fissura petro-tympanica.

The chorda tympani (Fig. 1, C; Fig. 5, C, C; Fig. 4, T.) enters the tympanic cavity by a minute bony canal which leaves the Fallopian canal and opens into the posterior superior part of the bony groove of the membrana tympani. The nerve usually crosses the mesotympanum by following the inferior arched border of the posterior

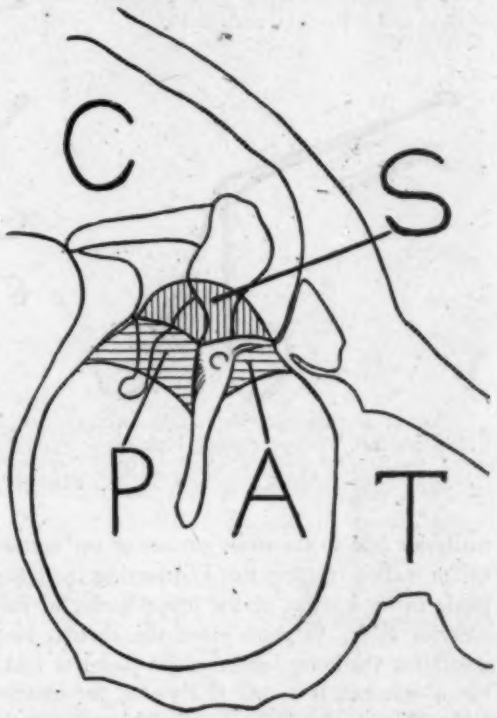
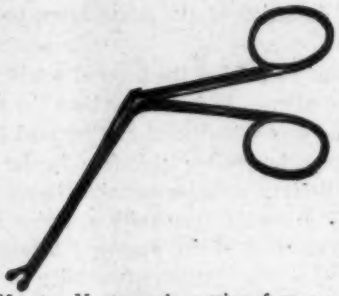


Figure 9. Schematic drawing showing relation of the posterior, anterior and superior pockets of the membrana tympani. C, pars cupularis or external attic; S, Prussak's space (recessus membranae tympani superior); P, posterior pocket, (recessus membranae tympani posterior); A, anterior pocket, (recessus membranae tympani anterior); T, tuba Eustachii. After Siebenmann.

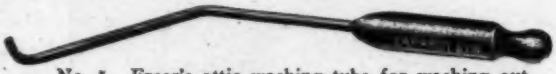


No. 1. Hartmann's cutting forceps.

No. 2. Hartmann's side cutting forceps, right and left, right angle beak.

No. 3. Hartmann's side cutting forceps, right and left, 45 degree angle beak.

No. 4. Pierce's middle ear canula, for washing out attic from mesotympanum through large perforation of the pars tensa.



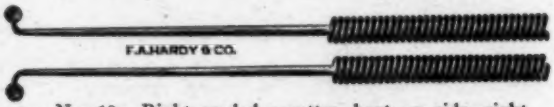
No. 5. Freer's attic washing tube for washing out attic through fistulous opening in Shrapnell's membrane.

No. 6. Straight round spoon curette.

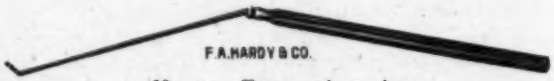
No. 7. Freer's 45 degree sideways bent curette.

No. 8 Freer's 45 degree bent on the flat currette, short bend.

No 9. Freer's 45 degree bent on the flat currette, long bend.



No. 10. Right angled curettes, bent on side, right and left.



No. 11. Freer attic probe.

Fig. 10. Instruments.

malleolar fold to the inner surface of the manubrium mallei, crossing this and leaving the tympanic cavity by way of the lower border of the anterior fold. In some cases the chorda does not follow the lower border of the posterior fold, but is attached to a fold of its own, the chorda fold. (Fig. 1, C.) The chorda fold may attach itself to the processus longus of the incus, so offering an obstruction to the drainage of the inner attic.

A study of the anatomical ear specimens of Dr. W. G. Reeder has been of great service to me in the comprehension of the intricate anatomy of the attic and I take pleasure in thanking him here for his help and suggestions.

ACUTE SUPPURATION OF THE ATTIC.

The foregoing review of the topographical anatomy of the attic shows, as described by Merkel, that the external attic or pars cupularis offers poor opportunities for drainage as it is built up in three stories or compartments. The first of these is formed by the anterior and posterior malleolar folds, with the anterior and posterior

tympanic recesses or pockets created by them. The second story, the superior tympanic recess or Prussak's space rests upon these two pockets and its roof helps to form the floor of the third story which is the external attic or pars cupularis. The inner attic is less subdivided as it has only one story, but nevertheless it, too, may be a partly confined space, difficult to drain for, as shown in Fig. 1, it is not only separated from the outer attic but the malleolar incudal body and often by the superior malleolar incudal fold, but may have merely apertures connecting it with the mesotympanum in cases such as shown in Fig. 1, where a large chorda fold, stapedal fold and tensor fold exist.

Thus it is seen that, while the mesotympanum forms an undivided, single, easily drained cavity of comparatively simple form, readily opened for direct drainage if the pars tensa of the membrana tympani be perforated, the attic or epitympanum is subdivided into a number of compartments with easily blocked intercommunications and communications with the mesotympanum, for, when inflamed, the normally thin mucous membrane folds, forming the floor and partitions of the attic, are capable of extreme obstructive swelling, the obstruction being aggravated by false membrane and pus clots, so that the normal outlets of the attic into the mesotympanic cavity may become wholly or partly closed, the pent up pus being dammed back into the tympanic antrum and mastoid cells. In addition, instead of having merely the tympanic membrane for its external wall, as is the case with the mesotympanum, the pars cupularis has an outer wall of bone, so that, in order to escape into the external auditory meatus, pus confined in the attic must find its way underneath the lower border of this bony wall, that is, under the margo tympanicus, and it can only do that after perforating the ligamentous attic floor, finally having to burst through the swollen membrana flaccida above or through Prussak's space before it can discharge from the ear. Therefore epitympanic perforations, instead of being simple punched out holes, as are perforations of the pars tensa, are necessarily fistulous tracts that give poor drainage through the resistant, dense tissue encountered and are situated high up above the region of the processus brevis. As is always the case in regard to deep-seated abscesses surrounded by firm walls, there is much edema of the integument about them so that acute suppuration of the attic with retained pus is accompanied by swelling of the superior meatal wall and great edema of the tissues surrounding the processus brevis, a peculiar ballooned or conical fleshy, dense swelling forming above the level of the processus brevis, this swelling overhanging the pars tensa which, unless the mesotympanum be also inflamed, may look almost normal, barring some reddening and a pink striation radiating from the menubrium mallei. The processus

Figure 11.—a, b and c, sketches of three drumheads made after cessation of chronic attic suppuration.

Figure 11, a. Healed chronic attic suppuration. Young woman of twenty. In childhood, in the acute stage, partial loss of the external attic wall, making it possible to look into the external attic and see the head of the malleus, C.

brevis and the membrana flaccida are entirely hidden by the swelling described. Usually in the center of the swelling is the minute outlet of the perforation leading through a fistulous tract up into the attic, a thread of pus hanging from it.

The foregoing shows how the anatomically performed obstructions to drainage from the attic

into the mesotympanum favor the formation of an attic abscess. This is especially the case when the external attic has a complete floor, the condition being aggravated where the inner attic is also nearly shut off from the mesotympanum because of mucous membrane folds that give it also a nearly complete floor. (Fig. 1.)

Drainage from the attic will be less unfavorable if there be a gap between the external malleolar and incudal folds as described, or if the

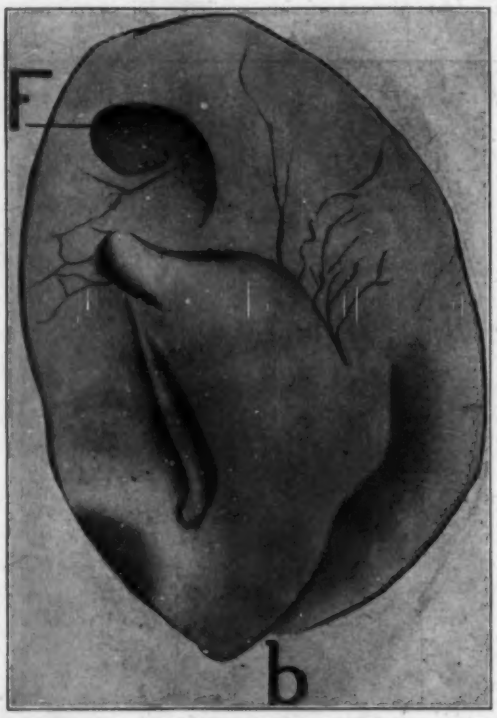


Figure 11, b. Healed chronic attic suppuration. A large polypus had escaped through the fistulous opening (F) in the membrana flaccida above the processus brevis. The pars tensa is somewhat deformed by contractile distortion. Complete recovery after severe attacks of pain, the hearing becoming normal.

tensor tympani fold is incomplete, there being no "tensor cul de sac" in this case to obstruct the flow forward to the Eustachian orifice. It is also, however, the author's observation that an incomplete tensor fold favors the direct entrance into the attic of fluids forced up into the Eustachian tube from the nasopharynx. This was made apparent directly after some adenoid operations by blood that shone through the membrana flaccida, the mesotympanum showing none through the normally transparent pars tensa. This indicates how the attic is often directly infected from the pharynx, the resulting otitis beginning in the attic, so endangering the mastoid cells.

Abscesses of Prussak's space alone are not common and are usually the result of the extension of an attic abscess from above into Prussak's space, which in this case merely acts as a passageway for the pus. This occurs in those cases in which Prussak's space opens into the external attic above the posterior malleolar fold as in the first description of Prussak. (Fig. 7, L.)

SYMPTOMS.

A chief characteristic of acute attic suppuration is earache of unusual severity exceeding that of a simple mesotympanic abscess, a diagnostic characteristic of this earache being the persistence of the ache after paracentesis of the pars tensa, while little or no discharge follows the incision unless there be a coinciding mesotympanic inflammation. Discharge from the paracentesis opening may appear a day or two later if the pus has been able to force its way from the attic into the mesotympanum. In this case the attic continues to drain through the perforation in the pars tensa, no fistula forming under the margo tympanicus, or the paracentesis opening may close, the power part of the drum head preserving a nearly normal appearance while a fistulous perforation forms at the apex of a conical or saclike swelling forming in the region of the margo tympanicus above the processus brevis as described.

TREATMENT.

While in acute attic abscess it is not possible, because of the swelling, to recognize the membrana flaccida or other landmarks of the upper part of the drumhead, the usual site of the attic perforation in the region of the membrana flaccida seen in chronic attic suppuration indicates that in the acute cases the perforation is also through this membrane, therefore, instead of a useless paracentesis of the pars tensa, a horizontal broad incision through the conical swelling described made in the direction of the probable location of the margo tympanicus and following the fistula if present may possibly help to evacuate the pus. The density and thickness of

the tissue to be traversed, however, and the masking of landmarks by the swelling make success uncertain, for the chief cause of the retention of the pus is the floor of the outer attic which lies above and behind the margo tympanicus. It would be possible to cut through this floor with an angular blade passed up under the margo tympanicus, but as the external lateral ligaments of the malleus would be severed this seems inadvisable.

Entering further into an account of acute attic suppuration would be merely to take up its often described mastoid complications, so that the subject is dropped here. As shown by Kretschmann there is far greater danger of mastoid involvement where the attic is the chief seat of the suppuration than where only the mesotympanum is involved, and the appearance of a perforation under the margo tympanicus is always to be taken as a danger signal.

ACUTE CATARRHAL ATTIC INFLAMMATION.

Very mild cases of transient attic inflammation are occasionally seen with moderate reddening and swelling above the processus brevis, the pars tensa appearing normal. These patients have often quite marked earache which is apt to be regarded as neuralgic unless the attic region be inspected.

CHRONIC ATTIC SUPPURATION.

In nearly all cases of chronic attic suppuration there is a history of an acute otitis, usually occurring in childhood and seldom requiring a mastoid operation, the ear never having ceased running or else having discharged intermittently, the outflow being of a fetid nature, occasionally enough so to be noticed at a distance from the patient. The explanation of the condition in most cases is that, because of ineffective drainage, especially of epithelial debris lying at the bottom of the pars cupularis, which acts as a cesspool, a mild, putrid catarrh has continued during the long period since the acute suppuration. Only rarely do graver states, such as caries of the tegmen tympani or associated mastoiditis, complicate the affection and the common opinion that a chronic fetid discharge from the ear has caries in the mastoid pracess or other serious disease in the temporal bone as its probable basis and hence imperatively demands a radical mastoid operation is not justified by facts.

The explanation of the rarity of mastoid involvement in chronic attic suppuration is to be found in the defensive measures which, in the long course of the disease, nature has been able to take and which consist of eburnation of the mastoid process with obliteration of its cells and often diminution in size of the tympanic antrum, so that the attic suppuration becomes truly confined to the attic. That this protective chronic solidifying osteitis does not always occur is proved by occasional extensive chronic destruction found in the mastoid process, but as a rule the cells are obliterated. While in chronic attic suppuration there has been time for a gradual local defense to develop, acute attic suppuration finds no such preparation and the normal anatomical structure of the attic and mastoid process, suited for air conduction and not drainage, may prove to be a danger that permits an overwhelming infecting invasion.

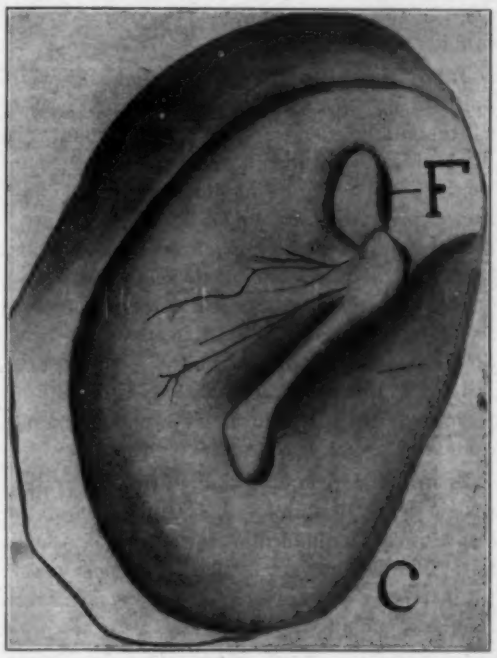


Figure 11, c. Healed chronic attic suppuration whose symptoms had simulated mastoiditis. Complete recovery with perfect hearing. F, fistula.

Chronic attic suppuration occurs in two types. In one, a large perforation of the pars tensa, sometimes involving all or nearly all of it, exists, the history of these cases being that

in the acute suppurative stage the attic abscess, instead of perforating the membrana flaccida has drained into the mesotympanum, which was also involved, extensive or complete destruction of the pars tensa of the membrana tympani resulting. Inspection through the large perforation in most of these cases shows the mucous membrane of the promontorium and the inner wall of the middle ear to be healthy, but covered with a moderate or slight mucopurulent foul discharge coming from above, the fetor remaining in spite of the clean appearance of the middle ear after washing.

In other cases masses of sodden, white epithelium, so-called cholesteatoma, are seen to fill the middle ear in greater or less amount. In unusual cases formidable collections are found that have been growing for years and have caused pressure atrophy of the walls of the attic, mesotympanum and tympanic antrum and distended all of these spaces into one great cavity. In such extreme instances the patient suffers from headache and neuralgic pain, reflected often to distant regions. Usually in chronic attic suppuration of the type with open drumhead there is very little pain and the patient merely complains of the discharge.

In this first type of chronic attic suppuration with a large perforation in the pars tensa the ossicles may be found intact or in part or wholly lost. The manubrium mallei is the most resistant part of the ossicles; where there is a large cholesteatoma all trace of them is generally lost.

In the second type of chronic attic suppuration the pars tensa with the manubrium mallei is usually intact, but above the processus brevis is seen a characteristic fistulous perforation remaining from the acute stage (Fig. 11, b, c.), which emits a slight, very putrid mucopurulent discharge or else is hidden by a scab. In other cases the fistula is covered by a polypus protruding from it, perhaps so large that it fills the auditory meatus and must be removed to expose the fistula. After such exposure by removal of the concealing scab or polypus a very fine probe (Fig. 10, 11) bent at forty-five degrees, about 3/16 of an inch from its distal end, will in most cases be found to pass upward through the fistula and behind the margo tympanicus into the attic, usually moving freely in its cavity. Probing directly inward with a straight probe will mislead as the probe will not advance. It must be directed upward into the attic. If a washing tube (Fig. 10, 5) of the same angle as the probe used, now follows it into the attic, white, putrid, masses of epithelium and pus may be washed down from it, the patient usually becoming dizzy, because of the direct effect of the water upon the bone covering the horizontal semi-circular canal.

When moved about in the attic the washing tube and still more an angular curette often give a sensation of grating against bare bone. This is no evidence of caries, but is usually merely due to the extreme thinness of the lining of the attic so that grating is easily produced.

Unlike those in the first group of cases, patients with the fistulous type of chronic attic suppuration are subject to onsets of earache due to temporary stoppage of drainage and accompanied by pain radiating to the temple, headache, pain with tenderness over the mastoid region and dizziness, these symptoms being accompanied by increased discharge. The mastoid pain may be due to mastoiditis but is commonly caused by an exacerbation of the existing chronic osteitis. The pain is especially severe while a polypus is being delivered through the fistula, the patient feeling great relief when it has escaped into the external auditory meatus.

Though rarely, mastoid complications may develop as the result of associated gradual distention of the tympanic antrum by retained putrid epithelial masses. On account of the tendency to gradual obliteration of the mastoid cells by eburnation described, the antrum may be the only suppurating cavity found in the mastoid process.

In spite of its rarity the possibility of chronic caries of the mastoid process must not be forgotten, especially as the only indication of such mastoid involvement may be the ineffectiveness of the local treatment of the attic suppuration which thus acquires diagnostic value. In other cases the outburst of an acute mastoiditis will prove the existence of chronic mastoid disease.

As described by Kretschmann and Politzer and shown in the illustrations in Politzer's textbook on the ear and in Fig. 11, a, b, c, the fistulous attic perforation may have many shapes from a mere pinprick opening, to a large one which represents the complete destruction of Shrapnell's membrane and in varying degree of the outer

bony wall of the external attic, so that the head and neck of the malleus may become visible. (Fig. 11, a.) The fistulous opening is usually high up, close to the margo tympanicus, several millimeters above the processus brevis, indicating, as shown by Kretschmann, that commonly the pus drains through the upper part of the membrana flaccida and directly underneath the margo tympanicus, Prussak's space not being involved.

While the results of former caries of the margo tympanicus are occasionally seen as described in form of a healed defect in the outer wall of the external attic, active caries, is, in my experience, rare.

Active caries of the ossicles may also exist, but here too, usually only the traces left by a former caries are found. Caries of the malleus, according to Kretschmann, always first attacks the neck of the malleus above the crista collis mallei and next the interior of the head. My experience with curettage of the attic has usually shown me that the malleus head had often disappeared long ago, while the manubrium and processus brevis are commonly present, active caries having ceased.

TREATMENT.

Manifest mastoid complications exclude any attempt at direct treatment of the chronic attic suppuration as a mastoid operation should then be performed. In all other cases an attempt to arrest the attic suppuration by local treatment of the attic is the proper procedure. If unsuccessful, it serves the diagnostic purpose of showing that the putrid discharge from the ear probably comes not only from the attic, but also from the distended tympanic antrum or from the mastoid cells. If the treatment, however, be successful, it eliminates the possibility of mastoid disease.

It has been my experience that the mere existence of a chronic discharge from an ear, no matter how slight it and the symptoms may be is for many otologists a warrant for urging a radical mastoid operation without regard to the risk of the loss of the often even perfect hearing of the patient and the probability that the cause of the discharge is confined strictly to the external attic, which is acting merely as a cesspool under the overhanging body of the incus. In these cases not only is the mastoid process not involved, but, because of eburnation, incapable of involvement, so that simple local treatment, as will be shown, may be able to remove the entire difficulty.

Treatment of the First Group of Cases with Large Mesotympanic Perforation.

In the type of chronic attic suppuration discharging through a large perforation in the lower part of the drumhead, recovery may often be brought about by washing upward into the attic from below with a vertical stream from an attic tube introduced into the mesotympanum through the perforation, hidden epithelial collections and pus being brought down from above. Repeated a few times I have known this simple procedure to cause a putrid discharge of years' duration to cease completely. In other cases the foul pasty collections of cast-off epithelium and pus have to be loosened with the angular curettes shown in Fig. 10 (10), a curette with the edge looking forward being passed up behind the remnant of the drum membrane and made to rotate from behind forward under the attic roof. This is followed by the curette whose edge looks backward, the scraping being then done in a backward direction. The attic tube then washes away the loosened masses. In most of these cases both the malleus and incus, barring perhaps a remnant of the manubrium mallei, have been lost. When these bones are present reliance must be placed on repeated washing with the attic tube and very gentle curettage or if this is ineffective, upon osseculectomy. Care must be taken not to scrape against the inner tympanic wall as the stapes often survives the malleus and incus and might be displaced from the oval window. The curettage must be conducted strictly forward or backward under the tegmen with the curettes mentioned or else down the inner surface of the external attic wall (niche of the ossicles), with the curette whose spoon faces the operator. Fig. 10, (8-9).

In the cases of cholesteatoma where large, thick, distending layers of white, firmly attached epithelium adhere to the attic walls and to those of the mesotympanum and tympanic antrum, which have been thrown into one large cavity, it may take the work of several sittings to clear the masses away with the angular curettes. Such cases are, of course, extreme ones, but those requiring less extensive curettage are common. In children a general anesthetic may be needed.

Polypi may hang down into the mesotympanum from the attic, their origin being hidden behind the outer wall of the attic. Here the best implement for their removal is the angular biting forceps shown in Fig. 10, (1-3), the forceps reaching up into the attic behind the margo tympanicus after being passed through the large perforation and cutting off the polypus at its base. After all visible polypi have been removed by the forceps its blades should be opened and closed up in the attic in order to cut off small polypi that are completely hidden from view. The angular curettes may also be used to loosen polypi for the grasp of the forceps.

When cleared and washed the attic should be dried with small cotton swabs turned upon a Buffum applicator into hard, even little cylinders, stiff enough to retain an angle when bent upon themselves. This angular swab is then introduced into the attic behind the upper rim of the perforation. After drying the attic the swab is used to convey pure boric acid powder up into the attic.

The treatment outlined nearly always removes odor and purulent discharge in a week or two, leaving the middle ear dry or usually merely moist. If the treatment is not successful, there is probably an inaccessible cholesteatoma in the tympanic antrum or possibly a mastoid complication or caries present.

Treatment of Second Group of Cases with Fistulous Opening Above the Processus Brevis.

In the second group of cases of chronic attic suppuration with an intact pars tensa and a discharge from the attic through a fistula above the processus brevis, the first thing to do is to probe the fistula into the attic. The only sign of the existence of the fistula may be a small scab above the processus brevis or a polypus in the same region or a large polypus or polypi that fill the auditory canal. After removal of these concealing objects the fistula may nevertheless be so minute and inconspicuous that, unless searched for with the probe described, its presence will go unsuspected and the otologist may think the slight discharge or small scab found merely a product of the external auditory meatus.

The probe in the attic gives the sensation of a surprisingly large cavity in which it is freely movable. The probe is followed by the angular attic fistula tube shown in Fig. 10, (5), which usually washes down a quantity of sodden epithelium and pus clots. The syringe is connected to the fistula tube by means of three feet of pure gum tubing, the syringe being worked by an assistant while the otologist holds the tube in the attic. The water must be agreeably warm and undue pressure avoided lest the patient have a severe attack of dizziness. After the washing the right and left curettes bent at forty-five degrees with the sharp spoon facing laterally Fig. 10 (7), are rotated respectively to the right and left in the attic to release collections of epithelium that adhere to the attic walls. The sensation of grating that accompanies contact of the curette with the attic wall is, as stated, of no significance and does not mean bare bone. If the curettes are passed upward parallel to the neck of the malleus, between it and the margo tympanicus, there is no danger of dislocation of the malleus even where the malleus head is present. To avoid such dislocation, however, the curette must not be pushed inward, unless extreme freedom of motion of the sharp spoon in all directions indicate the absence of the malleolar head.

In most cases where no polypi or only little ones are present this method of treatment repeated a few times will cause the putrid attic discharge to cease, the swelling about the fistula to disappear and mastoid symptoms to vanish and will either make the fistula close or become a dry, clean aperture. (Fig. 11, a, b, c.) If, in spite of this treatment, the fistula continues to discharge foul matter it is commonly because there are polypi concealed in the attic, or much less often, because of the presence of cholesteatoma of the tympanic antrum or in the mastoid process or because of caries of the external attic wall in the region of the margo tympanicus.

If one or more small polypi are seen about the fistulous opening or a large one protrudes through it there is always a probability that more are concealed in the attic. Therefore after clearing away the visible polypi, the angular curettes facing laterally should be introduced through the fistula, enlarged by incisions if necessary and used forward and backward underneath the tegmen tympani. Then the angular curette bent on the flat Fig. 10, (8), (9), should be used to scrape the inner surface of the external wall of the attic above the margo tympanicus in order to loosen or remove polypi present there, finally the

angular biting forceps Fig. 10 (2-3), being introduced and opened and shut in the cavity of the attic to take away the polypi that have escaped the curettes. After removal of the polypi the discharge commonly ceases unless polypi have been missed or their later development cause it to continue. If after repeated washings and removal of polypi the putrid discharge does not cease there is always a suspicion of caries or of an involvement of the tympanic antrum or mastoid process.

Where drainage seems inadequate because of the smallness of the fistulous opening it may be enlarged by incisions into Shrapnell's membrane or its remains, followed by curettage of the margo tympanicus with a sharp curette bent on the flat Fig. 10, (8), (9), in order to cut away some of the bone of the margo. If the bone is softened by caries or chronic inflammation this may enlarge the opening a good deal. The curette is introduced behind the outer attic wall and cuts toward the operator from above down.

For obstinate cases in which the curette fails to scrape away enough of the margo tympanicus to give needed drainage, Politzer has devised a chisel set with which he removes the external wall of the attic.* A trial of this instrument on the cadaver showed me that the hard, massive bone which forms the upper wall of the bony meatus and a part of which must be chiseled away to expose the attic from without, is very difficult to cut away with the light chisel necessarily used. Softened bone would be easier to be removed. Politzer did not like the bur for the work.

In suitable cases ossiculectomy may be employed if washing and curettage proves ineffective and if the hearing of the ear in question be nearly or quite lost. If it be good or seem capable of improvement the benefits to be derived from ossiculectomy are too problematical to urge the operation, even if the patient were inclined to take the risk of partial loss of hearing which ossiculectomy entails. As Politzer states, ossiculectomy is sometimes followed by more or less deafness and often by prolonged or persistent suppuration. However, there may be special cases where ossiculectomy seems the proper thing to do in a case of Kretschmann's where ossiculectomy caused an attic discharge to cease where a previous mastoid operation had failed.

For local anesthesia in the various manipulations and operative procedures described cocaine mud composed of fifty per cent alcohol and pure flake cocaine crystals has proved the most effective. It may be introduced up into the attic with the bent cotton swabs described.

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*Politzer, Lehrbuch der Ohrenheilkunde.

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THE ACUTE INFECTIOUS DISEASES OBSERVED IN COOK COUNTY HOSPITAL IN 1917

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CHICAGO

The patients admitted to the contagious ward of the Cook County Hospital represent all the acutely contagious diseases indigenous to this region except smallpox. Their relative occurrence in the county and city is mirrored by our wards except in the cases of smallpox and diphtheria which go to their respective city hospitals; smallpox in its entirety and diphtheria to a very large extent.

In order to show the relationship of our material to the community at large, our cases are easily divided into three classes; first, children of those families whose social condition is such that the home care of a patient with infectious disease would be too great a personal and financial burden. To this group should be added the nomadic day laboring adult, without home other than the transient boarding house.

The second group is that forced in by Health Department and police regulations. In these statistics it is represented by the poliomyelitis group only. This represents all classes socially and economically. Epidemic meningitis to a slight extent this year, because of recent orders, and more completely next year, will be analogous.

The third group is made up of individuals who have come to other wards of this hospital or are transferred to us from other hospitals. They are most frequently children or adults who have entered the hospital in the medical or surgical group, and developed while there, an infectious disease. This group also includes nurses and internes who are on duty in hospital wards and contract an infectious disease in line of duty.

An examination of this grouping would show a rather greater preponderance of patients from the strata of society below the middle than from that above. This deviation from the normal group treated by most physicians in private practice is not as great as might be imagined, however. Due to the education of the public toward hospitalization and especially of contagious diseases, we are more and more receiving cases from a better class of families, and I believe such statistics as we can give you are fairly representative of the virulence of the various epidemics in Chicago. Our death rate will be slightly higher than the average, due to two factors; first, the cases are frequently brought to us so late that serious complications have already occurred, and secondly, our percentage of delerium tremens is far higher than the usual range in private practice.

Our 1917 records show the presence in the hospital during the year beginning and ending with December 1st, of 2,438 patients. Of this number, 103, or slightly less than 4 per cent were not discharged as cured, but were transferred to the other wards of the hospital because of complications occurring in or preceding their entering the contagious hospital. This group is made up largely of children entering the pediatric ward, transferred to us on account of a contagious disease, and sent back to the pediatric department on recovering from the acute infection. In addition to that, it represents a considerable group of erysipelas sent to us from the surgical wards of this and other hospitals. From the standpoint of cure this group may be considered well, so far as the infectious disease was concerned, at the time of transfer.

One thousand nine hundred and twenty-six or 79 per cent of our aggregate, were discharged from the hospital cured. That is, they were cured as far as the acute infection was concerned. Amongst these, however, are the poliomyelitic cases cured of their acute infection, but discharged with their chronic paralysis. This group, plus those transferred, make up 83 per cent which may be considered cured.

Three hundred and twenty-four, or 13 per cent of our aggregate, died. Of this number, however, 123 had been under our care less than twenty-four hours at the time of death. These cases were for the most part moribund on admission. They were brought in by the police or sent in by the family only after the physician in charge had explained the hopelessness of the case. This does not apply to the poliomyelitic group as strictly as to other cases. In this disease the onset of respiratory paralysis is frequently overlooked by the physician and such cases are sent in with a hopeful prognosis. A fatal prognosis should be given in these cases, although we have had a few recoveries. If one subtracts these moribund cases from the total admission and the total deaths, it gives us a percentage of death rate slightly less than nine, which more nearly represents what should be charged as our death rate.

Five hundred and eighty-two of our admissions were straight scarlet fever. Thirteen, or 2.2 per cent died as a result of scarlet fever, there being no evidence of any complication. 138 were admitted as scarlet fever with complication of one type or another.

Our most frequent serious complication in scarlet fever was diphtheria. We admitted 115 cases of scarlet fever with this complication. 31, or 27 per cent, died.

These cases came to us very commonly in serious condition, frequently neglected. The neglect was due to two avoidable factors; first, a physician was called too late. Education and publicity only will impress upon the public the necessity of calling early medical aid in infectious diseases. Equally important, however, was the factor that the physician depended too fully upon bacteriological examination of throat cultures and smears for the diagnosis of diphtheria.

It is true that a very large percentage of scar-

let fever complicated by diphtheria will give throat cultures showing Klebs-Loeffler's organisms at some time, but many cases will give a negative culture and smear at the first or second examination and often even later. The bacteriological picture may be almost entirely made up of streptococci or show a mixed bacteriology which over-grows the Klebs-Loeffler organism.

It is essential for the reduction of mortality that these cases get serum early and in large doses.

This mixed infection should be recognized from the clinical picture. These cases are far more toxic than are the ordinary cases of scarlet fever. They run a higher pulse and temperature. In straight scarlet fever there is almost invariably a tendency toward convalescence at the end of the third or fourth day, demonstrated by a downward course of the temperature curve. When complicated by diphtheria, however, the temperature curve stays high and the toxicity continues. A distinctly septic mouth usually accompanies this condition from the onset. The tongue is dry, the lips fissured and the breath fetid. Drooling and nasal discharge are frequent, the cervical glands enlarge to pigeon egg size within the first few days, remain large for several weeks and may go on to suppuration.

These cases may be saved only by the early and large administration of serum. It is our habit to give 20,000 units of diphtheritic antitoxin with the first dose; unless early amelioration of symptoms occurs we repeat the dose in twelve or twenty-four hours. If the case comes to us four or five days after the onset and the condition appears serious we not uncommonly give 40,000 units as the first dose. With this treatment supportive measures are concomitantly instituted; the dosage of such supportive drugs is large and very frequently repeated.

That these cases, as well as cases of measles complicated by diphtheritic discharge survive *only* under relatively large amount of serum, we are sure. That cases which never give a positive culture are certainly diphtheritic, there may be some doubt. They react promptly to anti-diphtheric serum, but in view of the recent work on the effect of the introduction of foreign proteid or non-specific vaccine, one might conclude that this was not a specific reaction. One fact stands out prominently, that is, that the majority treated promptly with the serum proceed to convalescence, and those that do not receive this treatment as promptly die.

Scarlatinal rash complicating burns were the cause of death twice during the year. These were cases in which the scarlet rash followed severe burns, and the condition resulted in death. The complication is not necessarily fatal, but both these cases had extensive burns and the intoxication from them was so severe as to result in death. That such cases are true scarlet fever is doubtful. We have nothing to offer regarding treatment in this class of cases other than the usual systemic treatment and the use of supportive measures.

One fatality resulted from scarlatinal nephritis. The patient was admitted during the fourth week of the disease because of nephritis, and in spite of stimulation of skin, kidneys and intestinal tract, died a few weeks later of uremia.

Milder hemorrhagic scarlet lesions occurred rather frequently, and in one case of unusual severity ended in death.

One case, a young and vigorous medical student, developed, as a complication of his scarlet fever, a streptococcus throat of the virulent type, followed by a severe cervical adenitis, myocarditis, nephritis and death. The course of the disease was five weeks and death resulted shortly after the myocarditis appeared.

One other case of myocarditis occurred as a complication of scarlet fever, resulting fatally. This condition should always be considered of grave omen, for while cases with a chronic myocarditis may weather the severe diseases, the occurrence of an acute muscle degeneration during either scarlet fever or diphtheria very frequently results fatally.

Scarlet fever accompanied by measles occurred in six patients. These cases were desquamating from scarlet fever when admitted by us with measles. Four other cases came in with a desquamating scarlet fever, measles, rash and a beginning whooping cough. The whooping cough was characteristic both as to type of cough and blood picture, showing a high lymphocytosis in all cases. None of these was unusually ill, and a few doses of pertussis vaccine relieved the whooping cough.

Eight cases of chickenpox were superimposed upon a scarlet fever. One child developed a high temperature with the chickenpox reaching 104

for three days, bus aside from this, there were no untoward symptoms.

Cervical adenitis of sufficient consequence to be noted developed in nine cases. This condition parallels the acute nephritis of scarlet fever in date of onset, both beginning usually after the 19th day of illness. Our adenitis cases are treated with ice bags and later, if necrosis with apparent softening occurs, with hot applications. When the mass seems to be close enough to the skin, it is incised and large amounts of pus evacuated. We are trying horse serum on some of these cases now, at the onset, with the idea that the foreign proteid reaction may be beneficial. In the few upon which we have used it, it seems to have some value. However, but a small percentage of glands break down, no matter how treated, so it will necessitate a large series of statistics to determine results accurately. Furthermore, the different epidemics of scarlet fever differ markedly in the percentage of gland involvement. This series of 9 represents but 1.5 per cent of the 600 cases of scarlet fever, uncomplicated by diphtheria, a very small proportion indeed.

Fourteen cases or less than 2 per cent developed acute nephritis, 10 of them hemorrhagic at the onset. Several of them remained hemorrhagic for ten days or more, but all recovered. One death occurred in a patient from scarlet nephritis as previously recorded, but this case, as well as four other cases in this series, came in as nephritis, the acute exanthem having receded. One of these cases entered in such severe and constant uremic convulsions that he had to be restrained while a venesection was done. The administration of a single small dose of chloral and the removal of 18 ounces of blood resulted in the uneventful convalescence of what seemed a hopeless case. Another case entered in deep coma and reacted in the same way to the same treatment.

For the ordinary cases, the conventional hot pack, free catharsis, absolute rest in bed, a liberal diet in which meat was somewhat restricted, seemed to be sufficient. No case was allowed out of bed until the albuminuria had entirely disappeared. Basham's mixture was given to all these cases. The pallor and slight edema of the face are concomitant with the urinary findings and make the diagnosis.

Otitis media occurred in 22, or 3 per cent of the cases. This is a distressing complication as the case must be hospitalized until the purulent discharge ceases, a matter of many weeks, in the majority of instances. Our percentage is low, due to the fact that under no circumstance was a nose irrigated except with the child lying on his abdomen, and then only with the nozzle of the irrigator at least one-half inch from the nares. The ears themselves are treated dry, after rupture of the drum. Paracentesis was infrequently performed. Ten per cent phenol in glycerine was used for the alleviation of pain before rupture.

Mastoid operations were necessary twice. One case came in after the operation and the other developed the acute mastoiditis while under our care; both recovered.

One pericarditis and one case of noma occurred. They both recovered. The noma was treated with constant peroxide irrigation. It involved tonsil, alveolar gums and anterior pillar.

Arthritis occurred in three cases and with rest and salycilates resolved uneventfully. The arthritis was multiple in all cases and accompanied by severe pain and constitutional symptoms. It ran its course in from five to ten days.

Uncomplicated diphtheria of pharyngeal and nasal types occurred 157 times in our series of last year. Thirteen cases, or 8.2 per cent of these, died. This does not, however, represent the true diphtheria death rate. We admitted 18 cases of laryngeal diphtheria, and had 8 cases of this severe disease develop following the pharyngeal type. Our loss by death was 19 patients. These cases were all intubated, but the results have been unsatisfactory, for most of them come to us late. It is our practice to remove the tube at the end of the third or fourth day, and to leave it out permanently, if possible. In the large majority of this series, the tube had to be re-inserted repeatedly, due to the rapidly obstructing laryngeal edema.

Laryngeal diphtheria, complicated by measles and bronchopneumonia, was the cause of death in 7 cases, and measles and diphtheria caused 14 deaths.

As a complication of measles, diphtheria is almost always fatal. The diphtheritic infection is superimposed upon an already badly inflamed and non-resistant laryngeal and rhino-pharyngeal mucous membrane. The intoxication and the obstruction in these cases are early and grave. Twenty-five such cases occurred in this series and

as noted above, 19 died, a death rate of over 75 per cent. Other complications of diphtheria which came to our attention during the past year and resulted in death, were one case of tuberculous meningitis, and one patient in whom typhoid and erysipelas were co-existant. Three cases of diphtheria died with a pneumonia.

Exclusive of diphtheria complicating scarlet fever, our aggregate in which diphtheria existed alone or could be considered the most severe infection was 199. Our deaths from such diseases numbered 55, which represents 27.5 per cent of cases so diagnosed. This more nearly represents the death rate that should be charged to diphtheria than the 9 per cent due to the ordinary uncomplicated Klebs-Loeffler infection.

The total number of cases in which diphtheria contributed in any particular to the clinical picture was 311. Of this group 89 cases died, a percentage of 24.7, a clear demonstration of the fatality following the Klebbs-Loeffler infection.

Three hundred and forty-five cases of measles were included among last year's patients. These were cases in which measles was the principal disease although complicated by pneumonia in four instances on entering the hospital.

Five cases occurred in which to measles alone death was ascribed. Twenty-five cases died from the usual complication, pneumonia. Many of our measles cases came in because of the severity of the bronchitis, rather than because of the measles. It was only after a few days' observation with the continued high temperature that the diagnosis of bronchopneumonia was made. It is very probable that many of our cases came to us with the bronchopenumonia already existing, but not noted in the hurried physical examination of the admission room. Our total deaths from measles and pneumonia alone, was 30, about 9 per cent.

To look at the situation from another angle, measles alone or as a complication, occurred in 382 of our cases. 49 of these cases, or 12.8 per cent died.

German measles occurred in 36 cases and presented no complications.

Erysipelas was the cause of admission 369 times. Death resulted in 45 cases. This represents 12 per cent. Thirteen or 29 per cent of these deaths occurred because of complicating alcoholic delirium. Two died from a complicating pulmonary tuberculosis, and one with carcinoma of the scalp.

No complication of erysipelas is so serious as delirium tremens. All cases showing nervous excitement are given sedatives in large dose, thorough catharsis and such stimulants as may be needed. Alcohol is not given, except in very rare instances, either during the active disease or during convalescence. Our routine treatment was here, as in all cases showing nervous excitement in the infectious diseases, warm tub baths, lasting 15 to 30 minutes, repeated several times daily if necessary. Following the tub, these patients, in common with the toxic scarlets, are much calmer and usually sleep for several hours.

Locally, we have found ice water applications to the infected part, without bandaging, gave as great relief as anything we have tried. When the applications were bandaged snugly about the head or extremity, abscesses frequently resulted in the loose cellular tissue, which had to be drained. This was especially true of the upper eyelids in facial erysipelas. With the discontinuing of the bandage, we have rarely had an abscess develop.

Poliomyelitis and epidemic meningitis are both notable for the absence of complications. 428 cases of infantile paralysis were admitted; 105, or 25 per cent, died of this disease without any complicating factor, except a streptococcus sore throat in one instance.

Sixty-six cases of epidemic meningitis were admitted, and 34 died. This is a mortality rate of slightly more than 51 per cent, and we believe that it reflects severely upon the type of antimenigitic serum supplied commercially. Some of the cases came in too late, but a number of early ones were apparently in no way benefited.

Cross infections, the bane of every infectious disease hospital, are well exemplified by what occurred in our scarlet wards. 26 measles, 26 chickenpox, 6 mumps and 3 diphtheria cases developed here. This is a total cross infection of 61 cases in 2,438 patients, 2.5 per cent. In other words, for every thousand of these patients, for the greater part at the most susceptible age, 25 cases of cross infection occurred in a hospital which may refuse no case, no matter what complication it presents. Not a death occurred in this group.

Gonorrheal vaginitis, which existed frequently in individuals on entrance, never claimed a new

victim while under our care. We believe this desirable result is due to the fact that rectal temperatures have been eliminated and axillary and mouth temperatures are recorded instead.

The cases herein reported are the combined services of Doctors F. D. Francis, A. L. Hoyne, H. E. Irish, and myself. I am indebted to the other members of this staff for allowing me to report our combined services.

104 S. Michigan Avenue.

THE OPEN TREATMENT OF FRACTURES.

WM. F. SCOTT, M. D.
OAK PARK, ILL.

Mr. President and Members of the Aux Plaines Branch of the Chicago Medical Society:

To hope to cover a subject of such magnitude in the time available at this meeting is quite out of the question. The reason why it cannot be covered in a short space of time is the fact that each individual bone is a separate study in itself. I shall, therefore, limit my efforts to a brief outline of the symptoms which indicate that open treatment should be adopted and to a more or less detailed description of methods applied in some of the bones most commonly fractured. On first thought one would think that this subject could be dealt with in a few general phrases, but when this is attempted, one very soon determines that the natural fusing between the open treatment of fractures and the treatment of open fractures, together with the things I have mentioned, makes a short comprehensive paper on the subject extremely difficult.

The last few years of surgical development have perfected the technic of capable surgeons to such a degree that open operation upon bony structures has ceased to carry the grave misgiving that was formerly felt. Even in the short space of time that I have been in practice much of this change has been brought about. I remember very distinctly as a medical student between twenty-five and thirty years ago when we were taught to have grave respect for the peritoneal cavity and operations upon bony structures other than amputations. The fear of such work at that time was not imaginary on the part of those masters, as infection was then the rule rather than exception.

The change from this faulty technic of thirty years ago was not a sudden one, but has been a process of evolution and the term Lane technic or any other bodies' technic, is an absurdity on the face of it. It simply means that this particular man is able to apply a perfect surgical technic that all of us know but few are able to apply. A high-class surgical technician to me has been a psychological study as the things required to develop such perfection must form a complete circle, automatic in operation. I have not mentioned the name of Lane with intent to deprecate his skill in any way. I have seen him operate several times and admired his skill greatly. Two points in particular he lays stress upon which every surgeon already knew, but didn't take with sufficient seriousness. His teaching to avoid mussing around and a stand against suturing of the fascia surrounding the soft structures containing the bone to be operated upon is cardinal advice. The reason why he advises not suturing the fascia is, to permit the oozing from the wounded muscle and bone to escape into the subcutaneous tissue where it can be absorbed.

Now if one will go a step farther and specify accurately that the skin stitches should be placed ¾ of an inch apart and that they should be set back ½-inch from the edge to permit the secretions to escape into the dressings, you have a plan that fits best with our present knowledge of this procedure. Attempt to have a perfect skin coaptation is not desirable because of interference with drainage. It has been my practice to personally supervise the change of the dressings in these patients, for the first few days believing that it is almost as important as the operation itself. These dressings are changed daily until the secretions have ceased, which takes about five days in the average case. The first dressings, as a rule, are quite saturated, each succeeding one being less. No doubt there will be someone who will object to this procedure because of the teaching of Lane, and others that the dressing should be undisturbed unless constitutional symptoms indicate that they should be changed; a plan which I am absolutely sure is just as idiotic as the idea

*Read before the Aux. Plaines Branch Chicago Medical Society, Jan. 25, 1918.

possessed by the surgeon who attempts to treat fractures successfully without making frequent, subsequent examinations.

On account of my firm conviction of this method being superior, I have unconsciously, because of necessity, drifted almost entirely away from the use of plaster paris, using instead the yucca board splints, metal extension splints and similar appliances which can either be easily removed and cleansed or thrown away and new ones substituted, and at the same time permitting ready access to the wound itself. One of the cardinal principles in the open treatment of fractures is an incision through the soft tissues generously long. If one tries to work through an opening that is too small, a perfect technic is as impossible as it is to attempt to do an abdominal exploration through a two-inch incision. As to the indications for open treatment of fractures, one should consider the difficulty and comparative danger of the other means of reduction and fixation. It is a well-known fact that many of the fractures are in alcoholics which are on the ragged edge of delirium tremens. These patients are so extremely restless and bear pain so badly and are so impatient even with a liberal supply of booze, that it is extremely hard to have proper coaptation even in the simplest fractures. I have sometimes wondered if we had a counter with a brass rail and sawdust on the floor in the room of these patients if it wouldn't help to control them making them feel more at home. I have in mind now one very fleshy patient who had sustained a fracture of the humerus at the junction of the upper and middle third in which the attending physician had exhausted all known ingenuity in the way of treatment without open operation. The case was seen in consultation and extension, added to the effort already made, with 100 per cent. failure. Open operation was advised and accepted, a Lane plate was applied and the patient allowed to get up on the second day, after which he was very easily managed.

In considering the question of open operation we should also have in mind the fractures that are most likely to result either in failure of union or malposition resulting in more or less modification of function. As an example of this, fracture of the head of the femur might be mentioned. The frequency with which failure results in the treatment of this fracture makes one wish for a better plan than that of mechanical appliances without open operation. We must also consider cosmetic results, especially in treatment of fractures of the face, a crooked nose, a depressed malar bone or a depressed fracture of the frontal bone, are things that always lead to great dissatisfaction on the part of the patient. In fact, any fracture involving the face that will change in any way the normal appearance of the patient should be avoided. The possibility of injury of other important organs that cannot be clearly made out may lead one to decide in favor of open operation. Examples of this would be: fracture of the ribs, of the pelvis, of the skull or of the vertebræ.

Fractures involving the head of the femur have been so universally bad in the past that it seems to me that a definite conception as to the indications in such cases should be very clear and decisive. While it is true that occasionally one of these cases makes a fairly good recovery without open operation, it is surely a fact that if they are operated on within a reasonable length of time, the majority of them will end in a good functional result. The reason why operation for fractured heads of femur has gotten in bad repute is due largely to the fact that operation is not permitted until the bone has become so rarified that all effort must result in failure. If these cases are all operated on under proper surroundings, the right method chosen and properly applied, there is no reason why there should be such a large percentage of failures. We should remember that the blood supply to the head of the femur is small which will necessarily make repair slower. A wide incision should be made so that perfect technic can be carried out. With a proper fixation of the fracture by long screws, autogenous bone pins, ivory pegs, nails or wiring, success instead of failure ought to be the rule. The majority of fractures through the head of the femur treated by the rwiter has been through the great trochanter. Next common has been through the neck just inside the great trochanter. The method that is most applicable is the long screws which go directly through the shaft and into the neck and parallel with it. The length of the screw chosen should be determined by

measurement and should go as deeply into the articular head of the femur as is possible without damaging the articular surface. If you cannot be sure of this, the wound may be covered by sterile towels and an x-ray taken. This, however, is seldom necessary. If patients are told that this procedure will promise a more positive result and that it will practically eliminate all pain, there is usually no difficulty in gaining their consent. Of course, in addition to this fixation the contraction of the muscles should be overcome by an intelligently applied Buck's extension, one which runs freely over the pulley and is of sufficient weight to overcome muscle spasm. The most desirable time to operate on these cases is seven to fourteen days after the injury. There are several reasons why this is the most desirable time. At this time the attempt at repair by Nature is well under way, most of the blood clot has been absorbed and in its place callus formation is active and a suitable barrier has been placed by Nature to materially lessen the possibility of infection. One should be careful not to remove granulation tissue or shreds of tissue surrounding the fracture, as it contains the structure and cells which are to finally complete the repair. Each succeeding month lessens the likelihood of a good result and at the end of a year a perfect functional result cannot be had, as at this time there is sufficient rarification of bone so that mechanical fixation cannot be made.

Fractures of the pelvis with considerable displacement should always be treated by open method. The last year or two has added a few little wrinkles to the treatment of open fractures of the pelvis that adds greatly to the percentage of successful cases. Considerable difficulty has been experienced in dislodging the displaced fragments even when grasped by large bone holding forceps. This method should now be displaced and use should be made of the thigh and its pelvic attachments to bring about this result. I have applied it in two instances with equal success in both, and it has transformed a difficult operation into an extremely easy one. The position of the displaced fragment is usually backward and inward, and if the knee is flexed upon the thigh of the fragment side, one arm is placed around the thigh; grasping the edge of the table on the same side we have a fulcrum over which the thigh may be used as a lever in a perfectly safe and effective manner. The dislodgment should be made before the skin incision is made. If there is still slight displacement, it will be found that when the wires are tightened in the process of the operation, they will come in place with very little effort.

Fracture of the long bones where there is overriding that cannot be corrected and correction maintained, where there is interposition of soft tissues, or where the patient's general condition argues against long confinement in bed, should be treated, as a rule, by open operation. The best method of repair is either by suturing with wire, fixation with autogenous bone pins, with crossed ivory pegs or by Lane plate. The three methods have been named in regular order of choice. Of course, it is purely a mechanical proposition and the method of treatment best suited to the case must be chosen. A great deal of the enthusiasm for the Lane plate has passed, but there is no question but what it has a valuable place in the treatment of fractures. It should be applied with the idea in mind that it is probably a temporary splint, to be removed later. If it favors union in the most desirable position and its removal is required later, there is no reason why it should be classed as an incorrect procedure. The relief from pain in many instances more than makes up for the slight discomfort and danger of its removal later.

Practically all ununited fractures of the long bones are best treated by open operation and no doubt the most desirable way in the majority of them is either dove-tailing in position or by autogenous bone graft. If there is over-riding, dovetiling will fit most. If there is failure of union without over-riding the autogenous bone graft is most desirable. Some of my patients have objected to the autogenous bone graft on account of the bone having to be removed from the well leg. This has been overcome by making a sliding bone graft, cutting out the graft the desirable width, making it two inches on one side of the fracture and four inches on the other. Removing the short part of the graft, substituting in its place the long part which completes the bridge. The short part may be laid in on the other side, leaving practically no defect. I like the sliding graft better than removal from the other leg, as it simplifies the operation and makes perfect technic easier. The removal of bone graft by

means of the twin saw, motor-driven, is the nicest way to remove the graft, cutting off the ends with a chisel the same width as the graft. One disagreeable objection to the circle saw is that its speed of 2200 revolutions per minute sprays blood over almost every one in the room. This has been overcome by a home-made shield similar to the safety devices placed over machinery in factories. This graft may be cut straight through to the bone marrow or it may be marked out by the twin saw and then cut out in V shape by a single saw. Cutting straight through is no doubt the best as it can be done quicker and with less danger of contaminating the field. It also provides a graft with the undamaged periosteum on one side and the endosteum on the other, which makes a graft best suited to live.

In grafting old ununited fractures the medullary canal at the fracture point will be found to have disappeared. In such cases the graft must be removed after the use of the twin saw by driving a chisel the same width as the graft underneath. If the graft doesn't set well, it may be necessary to chisel away some of the callous in the bottom of the channel. The graft should be held in place by four kangaroo tendon stitches.

Recent fractures of the nose, as a rule, may be replaced by the use of the Kocher director within the nostril. It may be necessary, however, to temporarily hold in position by a fine pin or heavy needle driven through the skin at the fracture point. In old fractures of the nose the best method is to make a short incision at the base of the nasal bone not more than ¼-inch in length, a chisel of like width should then be selected. The motility of the skin over this region makes it possible to loosen the nasal bone completely without lengthening the skin incision simply by a forcible shifting of the incision itself. As a rule, it is only necessary to chisel on one side and then forcibly replace. If this is found impossible, the same procedure may be done on the other side. After replacement has been made we should then exercise care not to have infringed upon the nasal space on either side. Gauze packing or internasal splints may be necessary. This may be done in such a way as to leave little evidence of operation.

Of course, all depressed fractures of the face should be corrected early. The present military activity has made surgery of the head a tremendous field, especially surgery of the bones of the face. Gunshot wounds and shell fragment wounds many times cause multiple fractures which are infected. Care should be taken in these cases to mold the shattered fragments into position, preserving every fragment that has periosteal attachment. This must be done even if you know they are going to be cast off later by suppuration, as it favors new bone production which may be made to serve an excellent purpose in avoiding deformity. If particles of bone have been entirely carried away, the intervening space should be filled in by vulcanized rubber or by the use of dentist's modeling compound. Fractures of the jaws, with exception of the ramus, are always compound and are inclined to become very foul. This can be best prevented by the use of gauze packing, which has been dipped in the old-fashioned balsam of peru. Efforts should be made while the suppurative process is going on to keep the jaws in as nearly normal position as possible, and to retain the normal contour of the soft tissues of the face. Much good in private practice can come from a better knowledge of the recent English works in plastic surgery of the face and of our own Colonel Blair of Washington University who, I believe, is at the head of the plastic surgery department of the United States Army. One needs only to witness one of his clinics to fully realize the wisdom in choosing him for this position. The simplicity of his manner, the excellence in his work which is made just as simple as his manner, makes him one of the most likable men I have ever met. I would urge that if any of you have an opportunity to attend one of his clinics, that it will be well worth your while. Depressed fractures of the skull, whether causing focal symptoms or not, should be operated upon. The treatment may consist simply in lifting depressed skull or of ligating bleeding points.

Practically all cases of fracture of the spine giving symptoms of pressure upon the cord should be operated upon. If the symptoms of the lower extremities is due simply to hemorrhage, it may be benefited by operation. If the symptoms are due to pressure upon the cord, the earlier the operation is done the better. Of course, damage to the cord itself is permanent, as it has no power of regeneration. Operations for fracture

of the spine is directed almost entirely to relieving pressure and subsequent fixation by suitable frame.

TO SUMMARIZE.

Open operation should be more frequently made use of.

More frequent investigation should be made to determine whether constitutional disease is preventing or may prevent union.

Autogenous bone pins or graft is the most desirable mechanical aid.

That the Lane plate has a useful field, but it should be looked upon as a probable temporary appliance.

That the most desirable time to operate is from seven to fourteen days after the injury.

That a bone graft cannot live except in a clean field.

Contrary to the usual teaching, frequent inspection, if properly made, is not only safe, but desirable.

124 Wisconsin Avenue.

THE NEGLECTED LEUCOCYTE COUNT FROM A DIAGNOSTIC PROGNOSTIC AND DIFFERENTIAL STANDPOINT.*

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Of the many valuable clinical laboratory aids to the internist and surgeon, I know of no single laboratory procedure that will give more valuable clinical information than the title above chosen for your consideration this evening.

For this reason it is essential that I consider with you in as brief a manner as possible normal and pathological leucocytosis. For the appreciation of a leucocytosis some standard must be recognized as well as the variation from the normal.

In some cases the leucocytes may have become so greatly diminished by disease, such as typhoid, or by chronic conditions, such as prolonged starvation, that a symptomatic increase is recognized as a leucocytosis only by comparison with the normal count for that state, and if taken by itself, is by no means indicative of disturbance.

In typhoid fever, for example, where the count is below 5,000, as a rule, the leucocytes from some intercurrent inflammatory affection might be evidenced by a count of about 10,000, by no means abnormal in a healthy individual.

Again in the case of a starving man, where the leucocytes may be diminished to as small a number as 1,000, inflammatory processes might produce a leucocytosis of 5,000 or less. On the other hand, after severe hemorrhage there results a leucocytosis, which may reach from 18 to 20,000 the so-called post-hemorrhagic leucocytosis.

The *polymorphonuclear cells* are the cells concerned in all inflammatory reactions. They are increased locally at the site of inflammation where they may accumulate in such numbers as to form pus, and universally in the blood serum.

Their number, therefore, forms an index of the severity of the inflammation, though not exactly of the severity of the infective agent. They give, as a matter of fact, evidence of the *reactionary power of the tissues.* Should the resistance be so diminished that the infective agent, bacteria, for example, meets with little response, there is little or no increase in the leucocytes. In that event (as is seen in some cases of pneumonia) death results from *intoxication.*

If there is great power of resistance the leucocytes appear at the site of infection and either overcome the infective agents, ending by a process of resolution, or accumulate to such an extent as to form pus.

Generally speaking, then, all acute or pyogenic inflammations are accompanied by a leucocytosis, both absolute and relative—relative as regards the polymorphonuclear cell.

Inflammation is denoted by a count of from 15,000 to 20,000; even at this figure the process may subside.

In the stage of suppuration and abscess formation the count rises to 20,000 and upwards to 30,000 or even 40,000; at the same time the polymorphonuclear cells increase from 75 to 80 per cent. or more, and at times even above 90 per cent. It is impossible to give absolute figures as each case must be taken on its merit.

It is true that a count of 25,000 with an increase of polymorphonuclear cells above 80 per cent. is certainly diagnostic of abscess formation, and at 20,000, with an increase of polymorphonuclear cells, most probably so. Nevertheless,

*Read before the McLean County Medical Society, Jan. 8, 1918.

one has seen a count of 20,000, with 80 per cent, of polymorphonuclear cells, in a case of simple fecal obstruction from constipation, which subsided spontaneously, whereas a lesser count has revealed pus, e. g., 15,000 in cerebral abscess.

Leucocytosis is significant of pyogenic inflammation anywhere, whether it concerns a serous membrane, as in meningitis, pleuritis, peritonitis and pericarditis, or a mucous membrane, as in enteritis or urethritis, or whether the pus be accumulating in liver, gall-bladder, ovary, kidney, brain, etc.

Blood examination then reveals the presence of pus, but its situation must be diagnosed by other means.

After evacuation of the pus or subsidence of the inflammation, even if an abscess remains encapsulated, the leucocyte count falls to normal.

With this brief statement of the pathology of normal and pathological leucocytosis, we are better prepared to grasp and comprehend its clinical importance in the differential diagnosis of disease.

Let us now consider the application of the pathology of leucocytosis from the clinical standpoint of differential diagnosis.

A. From the Surgical Standpoint.—Leucocytosis is of especial value in three conditions: First, in cases of suppuration unaccompanied by pyrexia, such as are seen in cerebral abscess, and occasionally in appendicitis or other abdominal suppurations. One has seen a patient with very little discomfort and only slight pyrexia operated upon because of a leucocytosis of 40,000, with the result that the abdomen was found to contain considerable quantities of pus; and again, cases of cerebral abscess with a subnormal temperature and marked leucocytosis. Second, in distinguishing the early stage of typhoid fever from appendicitis. (In uncomplicated typhoid fever there is always a marked diminution of leucocytes—a so-called leucopenia: the number falls below 5,000, which contrasts strikingly with the leucocytosis obtained with appendicitis.) Third, excluding appendicitis, a leucocytosis would strongly point to tubular infection and eliminate typhoid fever.

The most recent and valuable contribution to the differential leucocytic count from a surgical standpoint is that of Vaughn, viz.: the advisability of operative or non-operative procedures in malignancy. His conclusions have been drawn and based upon an experience of over 30,000 blood counts, and I will quote you the most important findings.

In general, it may be stated that cases of early malignancy usually show a decided decrease in the total number of polymorphonuclear leucocytes with a corresponding increase in mononuclear cells.

Thus the differential count in early cancer closely resembles that seen in exophthalmic goiter, syphilis, and tuberculosis (the percentage of polymorphonuclear cells being frequently much below 60 per cent.).

When a tumor is growing rapidly, *and always after metastasis has taken place,* the percentage of polymorphonuclear cells runs above 70 per cent. and is usually much higher.

The differential count in early malignancy frequently varies from day to day, and more decided changes are noticed at longer intervals.

When a high percentage of large mononuclear cells is noticed for several days in succession, the tumor retrogresses during that period. Conversely, when the count shows a high percentage of polymorphonuclear cells for a continued period, it signifies rapid tumor growth. Indeed, during such periods the microscopic character of the tumor cells occasionally assumes a more malignant type.

The study of this large series of blood counts, besides furnishing the foregoing data, revealed one fact of decided clinical importance, namely, that metastasis does not usually occur until the percentage of polymorphonuclear cells *becomes high and remains so.*

In other words, metastasis does not occur until the immune mechanism has broken down and is no longer capable of being stimulated to renewed function.

Neighboring lymph glands may be slightly involved, while the immune mechanism is still intact, but no advance metastasis can occur during this period.

From this can be seen that if the first differential count in any case of malignancy shows a high, large mononuclear count and a low polymorphonuclear count, we can conclude that metastasis has not occurred, and that the case is *operable.*

If the count shows a high polymorphonuclear and a low mononuclear percentage, then we have at our disposal the wherewithal to test whether

the immune mechanism has been destroyed or whether it is simply an interval of increased tumor growth.

This is ascertained by injecting about 1 c.cm. of placental residue intraperitoneally into the patient and taking daily differential counts thereafter.

A twenty-four to forty-eight-hour decrease in polymorphonuclear cells signifies that the immune mechanism is still intact, and metastasis has not occurred and, therefore, that the case is operable.

No change or an increase in polymorphonuclear cells with a corresponding decrease in large mononuclear cells shows inoperability because of metastasis. Such patients actually receive harm and their end is hastened by surgical intervention, unless such a procedure is indicated for palliative reasons.

B. From the Internists' Standpoint.—The season of the year is near at hand when a leucocytosis becomes an important diagnostic feature in those pneumonias of the aged and the young, where there are no localizing symptoms as, for example, in central pneumonias.

Sometimes differential diagnosis can be made between diphtheria and simple follicular tonsillitis. In the former there is no leucocytosis, in the latter leucocytosis may vary from 10,000 to 30,000.

Leucocytosis, indicating as already stated the extent of the inflammation, is occasionally of prognostic value.

In pneumonia the leucocytes show constant variation, though in these cases the blood count is seldom performed, as the clinical differences are more important, and the prognosis depends, not so much on the leucocytic response, as on the virulence of the toxin, and its action on the tissue. There is, nevertheless, a constant change in the leucocytes. In the case of lober pneumonia, running a normal course, the leucocytes increase early, reaching from 20,000 to 30,000, and fall either just before or after the crisis. Leucocytosis is maintained in delayed resolution, and in empyema or abscess formation. Leucocytosis is absent in the early stages of fatal cases, with severe intoxication, and in mild cases with good resistance. The distinction between these is easily made. In pneumonia then the leucocytosis can be taken as an indication of the severity of the reaction to infection. It has been pointed out that all pyrexias are not associated with changes in the leucocytes, but only those that are accompanied by pyogenic inflammation.

In measles, malaria and tuberculosis there is never a leucocytosis. In scarlet fever the leucocytes may vary between 10,000 and 40,000 and the polymorphonuclears may average 90 per cent.

In smallpox leucocytosis appears only with suppuration and formation of pustules, while previously there is a steady diminution of polymorphonuclear cells.

Although in typhoid fever leucopenia is the rule, a leucocytosis is found with suppurative complications, such as empyema and also when the typhoid bacillus acts as a pyogenic organism in parts of the body other than the intestine, as in periostitis, cholecystitis and pneumonia. But it must be noted that the polymorphonuclear cells are always relatively fewer than in other pyogenic inflammations, though increased absolutely in contrast to the numbers found in uncomplicated typhoid infections. Leucocytosis in the course of typhoid accompanies such complications as peritonitis, empyema, and pneumonia, though the absolute leucocyte count may not be very high, as compared with the normal healthy count.

In perforation the leucocyte count is of some assistance when there is any reason for doubt, but the remarks as to the absolute figures mentioned above must be borne in mind.

A progressive increase in leucocytes, for which purpose the blood should be examined hourly, is significant. A count of 10,000 might represent a leucocytosis in typhoid. By this means it is sometimes possible to diagnose the local peritonitis that precedes the perforation and thus by early operation give the patient a better chance of recovery. In fulminating perforations there is no leucocytic response and the same applies to cases of appendicitis. In septicemia the leucocytic variations are indefinite. In pyemia with definite collections of pus there is a marked leucocytosis with a relative increase in the polymorphonuclear cells.

Eosinophilia—The coarsely granular polymorphonuclear or eosinophiles, which we do not consider to be markedly different from the true polymorphonuclear cells, are often increased in asthma of the true bronchial or idiopathic type, where they reach 10 to 15 per cent. and so may be of

assistance in distinguishing this type from the symptomatic asthmas.

In some cases of skin diseases, such as pemphigus and urticaria, and in parasitic infections such as trichinosis, echinococcus disease, and the common intestinal worms, an increase of these cells is obtained, and occasionally a diagnosis of the condition can be made on this fact alone.

I desire at this time to call your attention to a fact not universally recognized by physicians that many errors have been made in differential diagnosis between typhoid fever and trichinosis. At the Cook County Hospital many cases diagnosed as typhoid by experienced clinicians, proved to be trichinosis. The clinical syndrome that led to this error was pain, muscular soreness and tenderness, the pyrexia curve simulating the one obtained in typhoid, of the continued type and varying less than a degree. Whenever you have a patient running a temperature like typhoid who continually emphasizes and constantly complains of muscular pains, exquisite tenderness to touch and soreness of these structures, think of trichinosis, make a blood smear and make or have made a differential count; by so doing errors of this kind will less frequently occur.

Cerebral irritation occasionally considered organic will be found to be reflex (gastrointestinal), due to parasitic infections, and many other clues of clinical value obtained.

The clinical value of a leucocyte count from a prognostic standpoint has been logically defined and tersely stated by Hewitt (Annals of Surgery, August, 1917) and may be summarized as follows:

(A) The absolute count alone is of questionable value; but the polymorphonuclear count alone is usually a reliable diagnostic index. Yet the two, when correlated, are of greater value than either taken alone, especially so in prognosis.

(B) When both counts are high, the prognosis is good.

(C) A high absolute with a moderately low polymorphonuclear means generally a good prognosis, but a low absolute with a high polymorphonuclear count generally indicates a grave prognosis.

(D) When both counts are low, there is usually no infection.

(E) Normal or subnormal figures do not necessarily indicate the absence of suppuration, gangrene or their sequelæ.

(F) Catarrhal cases, moribund cases and walled off abscesses frequently do not stimulate leucocytosis.

Lymphocytosis—Variations in the mononuclear leucocyte are significant. An increase of the small lymphocytes, i. e., a lymphocytosis, is found in gastrointestinal disturbances of children, in whom it must be remembered there is a relative lymphocytosis as compared with adults. In infancy this type of cell ranges from 40 to 60 per cent. and gradually diminishes with age.

Lymphocytosis is constant in whooping cough, even in the catarrhal stage, during which the presence of a leucocytosis of 40,000 coupled with a large increase in the lymphocytes, even from 40 to 50 per cent. in an adult, has led to an early diagnosis.

This has proved to be especially valuable in the cases of nurses who have been isolated before the characteristic cough appeared.

As to the appearance of this type of cell in the leukemias from a diagnostic and prognostic standpoint, no doubt you are fully informed.

Every live medical man, be he young or old, should be continually on the lookout for something that will increase his efficiency. With the majority of practitioners, the sins of omission are usually far greater than the sins of commission; in other words, the average doctor of today errs more on the side of laxness than from the exhibition of an over-plus of effort or enthusiasm in his attempts at careful diagnosis.

Laboratory methods of diagnosis like clinical methods have their limitations, and if relied upon alone, frequently lead to incorrect interpretations. When correlated mental conceptions of pathological processes become more clearly defined, errors in judgment are less likely to occur.

In conclusion I desire to urge you older practitioners and busy internists to give more consideration to the value of the clinical laboratory in diagnosis. Negative findings upon the part of the laboratory technician will not only ease your conscience, but will enable you to differentiate the clinical syndrome with a greater degree of confidence.

The strongest fortification of defense I have any knowledge of is constructed of four words, namely, typhoid, malaria, lagrippe and threat-

ened. For years the medical profession has been playing hide-and-go-seek behind these breast works of defense to the detriment of humanity, and retarding the advance of scientific medicine.

As a picture sometimes, even if drawn by a poor artist, is more impressive than words, I herewith submit one for your consideration and I trust it may forcibly convey to all of you the value of clinical laboratory methods.

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PROBLEMS OF THE MEDICAL OFFICER OF THE NAVY.

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As naval and military affairs are at present much more prominent than normal in the country, it occurred to me that something of the duties of the naval medical officer, the part wherein his life differs essentially from that of his brother practitioner in civil life, might be of more interest than the discussion of disease or some problem in sanitation.

The naval medical officer is one of the parts of the great machine that goes to make up the nation's first line of defense in time of war, and which in time of peace plays no small part in the social intercourse of nations.

Entering as we all do from civil life our first problem is to adjust ourselves to the changed environment, its peculiarities and necessities, so that the cog which we form in the machine shall move with the least friction and greatest efficiency. We are charged with the maintenance of the health of the personnel of the navy, to reduce the wear and loss in the fighting machine from a health standpoint to its minimum, as any interference from this cause has a far more serious effect than is generally appreciated upon the value of a ship as a fighting unit. One can realize that if carried to a sufficient degree the fighting ship ceases to be such, and might become a floating hospital, a source of expense to the public with no ability to efficiently carry out its proper function.

From the earliest times in the wanderings of men at sea it was realized that those forming the crews of vessels were subject to the various diseases of the ports visited as well as certain diseases peculiar to ship life. Scurvy, while not confined strictly to the sea-faring man, was a much more common disease on board ship than it was ashore. Perhaps one of the most striking examples of the ravages of this disease is recounted in the narrative of Anson's voyage around the world in the eighteenth century when man after man was lost in sight of land which could readily have been reached had only a sufficient number of healthy men remained in the crews to have worked their ships to anchor where the means of checking and curing the disease could readily have been obtained.

Early in our career as a nation the need for the medical man afloat was appreciated and provided for by the Government. To secure the most efficient operation of this department, a bureau was created under the Secretary of the Navy, whose duty it was to look to the health and sanitation of the naval service.

The Bureau of medicine and surgery has as its head the surgeon general, a medical officer who is responsible for the proper operation of this department. Our duties are divided into periods at sea and ashore, the former being more nearly fixed as three years is usually considered the time of such duty, while the shore period is more variable, but is usually of about two years' duration.

In order to more promptly familiarize the recently appointed medical officer with his duties, a school is maintained in Washington for the purpose of instructing the novice in the duties expected of him, to acquaint him with the rules and regulations of the service necessary for the proper operation of the medical department in its relation to the other branches of the service, and to accentuate and enlarge upon those professional branches that experience has shown to have a larger bearing in the naval service than is generally considered to be the case in civil life, viz., tropical medicine, hygiene, surgery under naval conditions, and the laboratory work associated with these studies.

On board ship at a definite hour each day, a sick call is held at which time those members of the crew, who wish to consult the doctor, present themselves. This, by no means, ends his professional duties as he is subject to call at any time during the twenty-four hours as is his brother in

civil life. In addition the medical officer has certain duties to perform in connection with practically all of the various drills held on board ship. The drill periods occupy most of the forenoon hours, one or two hours in the afternoon, and are of frequent occurrence at night. He must make himself familiar with the structural characteristics of the ship, the efficiency of its ventilating system, and all of its sanitary features. Once each week, and oftener if deemed necessary, he must make a thorough inspection of the entire ship and report in writing any sanitary defects found, submitting recommendations for their correction. Should contagious disease appear on board his labors are greatly increased as examinations of the personnel and ship must be of daily occurrence. He must be prepared to care for any surgical work that may present itself, and accident surgery is extremely liable to be encountered during rough weather, for reasons which are obvious. He must instruct the various officers in first aid, who in turn impart this instruction to the men under their command so that hurried dressings can be applied when practicable during naval engagements.

In the navy the primary object of the existence of the ship as a fighting vessel must always be borne in mind. During an engagement the welfare of the wounded individual is primarily in the hands of his mates, and is decidedly secondary to fighting, success in the engagement being the only thing that counts.

After much thought and trying many methods, it has been concluded that the medical officer and his staff can ordinarily render but very little aid to the great mass who may be wounded during an engagement, but as soon as this is terminated or should a lull occur, he as rapidly as possible renders all the aid at his command. As is well known, after the Emden was destroyed the medical officers worked from the termination of the engagement until they fell in with the relief ship sent to their aid. They worked continuously for twenty-four hours.

It might be presumed that the medical officer and his staff are kept in some safe place while the ship is in action, but no such place exists on a man-of-war. The records of naval engagements show that medical officers have paid the price of naval duty to fully the same extent as officers of any other class.

When cruising in tropical waters the medical officer must keep constantly informed of the diseases prevalent in ports visited, and the sanitary conditions of the towns and their vicinity, where members of the crew are liable to wander in their periods of shore leave. Expeditionary forces have more frequently been landed in tropical and oriental countries than elsewhere, and some tropical disease or diseases, such as yellow fever, malaria, dysentery, cholera or plague are almost sure to exist in the vicinity. The medical officer lands with this force and upon him falls the responsibility of making such recommendations as to prevent the introduction of these diseases into the command.

In addition to the duties enumerated above there are many others, boards, courts, etc., that help to fill out his day. On shore his duties are in naval hospitals, navy yards, at recruiting stations and a certain number are engaged in the bureau of medicine and surgery in operating the medical department of the service.

The professional work in naval hospitals does not differ from that of civil institutions, but in addition the naval medical officer has many other duties. He is responsible for the care, cleanliness and discipline in the hospital, its maintenance and upkeep in every way, food for the personnel, diets for the sick, fuel, ambulance service, beds and bedding, drugs, all medical and surgical equipment and appliances, the keeping of the necessary records, making reports and returns, training of attendants, keeping the families or friends of the sick informed of their condition, and the disposition of the dead.

Our navy yards are large industrial establishments employing many thousands of men, each of whom must be given a careful physical examination before he is employed to ascertain whether he is physically fit in order to avoid unjust claims for compensation for injuries not received in the performance of duty. He must render treatment to the injured employees. This formerly consisted of but first dressings, but has now been extended to the whole care of the case should the employee see fit to present himself at the yard dispensary for treatment. In addition to these duties the yard surgeons must make sanitary inspections of all buildings and shops weekly, reporting the same and making recommendations for correction of the defects found.

At recruiting and training stations he prevents those who are physically or mentally undesirable from entering the service, and in the latter in addition to occupying a position similar to that of the surgeon of the navy yard, must weed out those defectives whose ailments were not evident to the recruiting officer. He should be especially apt in recognizing contagious disease which might become epidemic in the garrison, or which might be carried by a member of an outgoing draft to some ship.

The enormous expansion of the service in consequence of our entry into the present war has necessitated a corresponding enlargement of the medical personnel and staff. Before the war we were caring for something less than 100,000 men with a few over three hundred medical officers, whereas now the naval personnel numbers over 300,000, and we had about 1,700 medical officers according to the last figures that I have received. There is a great need for more doctors. The three hundred and odd medical officers in the navy when the war began had, in a great measure, to bear the burdens of this enlargement, not that our brothers in civil life have not come to our aid, but because of the peculiar duties of the naval medical officer above enumerated, with which they were not familiar, prevented their assuming an equal share of the burden. Naturally, the larger number of these doctors were recent graduates who had yet to gain that experience that only can be obtained in practice, extended hospital training and study.

The doctors have entered the service with that splendid enthusiasm of the profession which needs no comment from me. All anxious to do their part, and with the older men, many great financial and home sacrifices have been made. These older doctors are of the greatest value to us as employed in the branches of the profession in which they have specialized they are used in guiding and assisting the younger members in the development of their professional talents, while we of the older service have had to devote our time to the expansion necessary to accommodate the greatly increased number of patients, to the executive and administrative features from the naval standpoint, in addition to the duties in the fleet that could not be delegated to those who have so recently taken up a naval life.

This is but a very brief and incomplete summary of the problems of the medical officer of the navy, but I hope has had some points of interest for you.

THE SYMPTOMS, DIAGNOSIS AND TREATMENT OF ACUTE ANTERIOR POLIOMYELITIS.*

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Acute anterior poliomyelitis is a general infection with a tendency toward secondary nervous involvement. This conception is the basis of Draper's[1] three groups. He calls the first group the "dromedary" group because it presents two periods of illness with an interval of well being. The first period represents the systemic infection and is characterized by fixation of the virus in the spleen and bone marrow. The second period denotes the secondary cerebrospinal involvement and the invasion of the cerebrospinal spaces. In the second or "straggling" group the rather clear-cut interval of well being gives way to a sustained period of indisposition. The third or "sudden onset" group is characterized by nervous involvement from the onset. The classifications of the disease are as variegated as its manifestations. Without burdening the discussion with the numerous interpretations we may adopt the simple clinical classification emphasized by E. K. Armstrong of an acute infectious disease which may be paralytic or nonparalytic. The non-paralytic cases comprise the so-called abortive cases which correspond to the first hump in Draper's "dromedary" as well as those with meningeal irritation without subsequent paralysis. The paralytic type may be divided into the common lower neurone or bulbo-spinal type, the upper or cerebral type and the combined.

With these possibilities in mind we are in a better position to understand the variable symptoms. It must be borne in mind, however, that not all the symptoms even of the general infection are present in any one case.

SYMPTOMS.

The incubation period is from two days to two weeks.

The onset is usually sudden following a period

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of well being with fever, drowsiness, irritability, hyperesthesia, anorexia, pain and often tremor of muscle groups. There may be gastro-intestinal disturbances, angina, influenza like attack or an onset with meningeal symptoms. Owing to the indefiniteness of the symptoms patients often overlook the seriousness of the illness until paralysis sets in.

Temperature often reaching 104 or 105 degrees persists from three to five days, but in the straggling group may last seven to fourteen days. It may remain about 100 degrees after recovery has well advanced. In a series of 400 cases Wilson[2] found two per cent. had no history of fever. There is no typical temperature curve although some cases terminate by crisis.

The pulse rate is high.

Gastro-intestinal disturbances are common and may be the most prominent feature. About half the cases give a history of persistent constipation for a few days. In the 1912 epidemic in western New York of 264 cases 85 per cent gave a history of constipation. Vomiting occurs in about one-third of the cases, and there is often abdominal tenderness.

Sore throat is frequently the most noticeable symptom, and when coupled with palatal paralysis simulates a post-diphtheritic paralysis.

Drowsiness is a conspicuous feature even to such an extent as to simulate coma. However, the child is easily aroused and is bright mentally. It is striking that the mental activity persists to the end. The indisposition is mostly due to pain and discomfort.

Irritability is pronounced, due to pain accompanied by restlessness.

Coarse twitchings of parts of the body as the arm, leg or face are significant. This phenomenon is known as Colliver's[3] sign. The movements are explained as preliminary irritation of the anterior horn cells before degeneration occurs.

Perspiration is frequently seen, particularly in severe cases. This persists well into the period of convalescence and is ascribed to a connection between the motor and sweat governing cells.

Muscular weakness during the acute stage is more apparent than real, since after the acute stage passes off the muscles are surprisingly active.

Pain and tenderness has been analyzed by Fraser into three varieties, first, the hyperesthesia of the skin itself; second, that due to pressure on the deeper muscular tissues, and, third, the pain elicited only when a part is moved due to stretching of muscles, tendons and articular structures.

The spine sign is an important symptom and is usually present. Attempt to anteroflex the spine produces pain, and the neck is held rigidly giving the pictures of meningeal involvement.

Falling back of the head when the shoulders are raised is equally constant and considered by many pathognomonic of poliomyelitis.

Motor phenomena are as varied as may be imagined. Motor disturbances may involve only a small group of muscles, probably never a single muscle. There may be complete paralysis of a muscle group or only slight weakening. If the upper neurone is involved spasticity results. Usually these become flaccid from subsequent lower involvement. In the common bulbo-spinal variety there is a flaccid paralysis. In addition to the ordinary lesions of the lumbar and brachial enlargements there quite frequently occur facial paralysis and involvement of the urinary and anal sphincters. Of greatest importance is the condition of the respiratory muscles since death is a likely result in those cases. The picture of intercostal paralysis is clear cut. The chest is fixed, and breathing is abdominal. The efficiency of the respiratory muscles can be tested by pressure on the thorax to determine the action of the diaphragm, and by pressure on the abdomen to test intercostal efficiency and that of the accessory muscles.

The reflexes are of interest and vary depending on the pathology. They are absent or diminished most frequently, but may be exaggerated or unequal on both sides.

The sensory symptoms may be due to posterior ganglion involvement it has been suggested. In bulbar cases hyperacusis is present.

The blood picture shows a count of twelve to fifteen thousand leucocytes of which four to six per cent are eosinophiles as reported by Francis.[4] There is a slight increase in polymorphonuclears and diminution in lymphocytes.

The spinal fluid is abnormal in practically all cases in the first week. By the fourth week only 50 per cent are abnormal after which the proportion rapidly falls.[5] Studies by Peabody and Draper[6] and Fraser[7] shows that there is no relation between the spinal fluid findings and the

onset of paralysis. The fluid comes out under increased pressure, but it rarely spurts, resembling the fluid in other acute infections. Although clear at first a thin web may form on standing. The cell count is usually increased, varying markedly in number. At first the polymorphonuclear cells predominate, later the lymphocytes. Occasionally large mononuclear and irregular cells are found, probably of endothelial origin. Fehling's solution is promptly reduced. Albumin is increased and globulin reactions are positive in about 50 per cent of cases in the first week, increasing in proportion to the third week. These findings may persist eight to ten weeks. Zingher[8] describes a slight opalescence giving a ground glass appearance when the fluid is held to the light. In Lange's test a precipitate occurs in the luetic zones. Coccoid organisms are described in the spinal fluid by Nuzum[9] and Gauss.[10]

COURSE.

The course of the disease varies depending on the group into which the case falls in Draper's classification, the "dromedary," straggling or sudden onset group. Fraser[8] divides the course of the disease into four stages. The incubation period of good health, the preparalytic period with its sudden onset lasting two to fifteen days, usually present in epidemics, the stage of paralysis or weakness which may progress as long as ten days and the fourth period or stage of subsidence of symptoms. During this time the pain and tenderness disappear. Although usually the course is gradual, sudden changes may occur. Cases which appear to have reached the height of involvement within twenty-four hours may suddenly advance with respiratory paralysis and death. The immunity seems to be suddenly overcome by the active forces of the disease.

DIAGNOSIS

The diagnosis may be made on the presence of an epidemic, history of exposure and the onset with the symptoms of an acute infection followed by the more pertinent symptoms of hyperesthesia, headache, irritability, drowsiness, though easily arousable, rigidity of the neck, falling back of the head, the "spine sign," Colliver's coarse twitchings and the spinal fluid findings of increased cell count, the presence of globulin and a clear fluid under increased pressure. The early symptoms are only diagnostic of an acute infection. Later the signs of meningeal irritation, spinal fluid findings and nervous involvement are manifested. The most common difficulty in diagnosis is the resemblance to epidemic meningitis. The character of the spinal fluid and the presence of the meningococci determines the diagnosis. The same holds true for the other purulent meningitides. Tuberculous meningitis may be simulated. The spinal fluid in this case may contain tubercle bacilli and injection of the fluid into a guinea pig may facilitate the differentiation. Tuberculous meningitis terminates fatally, while poliomyelitis manifests paralysis and usually recovers. There may be a primary focus evident in the former case and also choroidal tubercles. Syphilitic meningitis is determined by a positive Wassermann test and precipitation in the lower dilutions in Lange's test. Other diseases to be excluded are gastro-intestinal disturbances, rickets, scurvy, acute arthritis, and tuberculosis of the hip.

TREATMENT

The specific treatment of this disease depends on the determination of a specific organism. It has been found that serum of convalescent patients contains opsonins for the coccus found in the brain and cord.[11] It is logical to suppose that antibodies are developed during the course of the disease and that injection of patient's serum should have a beneficial effect on the course of the disease. Convalescent serum has been used quite extensively. It may be administered intraspinally, intravenously or intramuscularly since the disease appears to be a hematogenous infection. The serum drawn off from the blood or whole citrated blood may be given. The dose intraspinally depends on the amount of spinal fluid withdrawn. Intramuscularly large amounts, as high as 100 c.c. may be given. The reports of the serum administration are not decisive. It is the opinion of those that have used convalescent serum that there is a definite beneficial effect with which one is impressed on treating individual cases, but which does not lend itself readily to statistical demonstration.

Immune sera have been produced independently by Rosenow[12] and Nuzum[13]. The results of the specific serum are suggestive and much may be expected from this line of study. However, exact demonstration of its value is as difficult to obtain as in the case of convalescent serum. In the comparison of treated and un-

treated case parallel series are extremely difficult to obtain. Two factors must be constantly kept in mind in judging results. First, the paralysis tends to improve spontaneously, and, second, death is due to respiratory paralysis. Since one cannot measure the amount and extent of spontaneous improvement and since cases vary so markedly in virulence it is especially difficult to compare one set of cases with another. It is to be expected that the time of treatment is highly important. No amount of serum will restore degenerated anterior horn cells. Does the serum prevent the development of respiratory paralysis? So far it can only be said that the impression one receives in using sera, convalescent or specific, is that they exert an appreciable beneficial effect. It will require large series of cases to prove that paralysis is prevented or lessened and that the mortality rate is lower.

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SOME OBSERVATIONS ON GOITER.

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In the practice of medicine and surgery, we find that the treatment of various diseases is a matter of progressive development. There are many fads, but out of these fads come sound medical and surgical principles, which find an abiding place in our knowledge, and in the practice of our art.

In my own short experience I can recall how the vermiform appendix gradually became recognized as a surgical entity. And a litte later how the gynecologists began to work out the many problems connected with defective pelvic organs. Then later, the work on stomach and gall bladder had its development, so that now the extirpation of the gall bladder or part of the stomach, and the various plastic operations on the latter organ are of rather common occurrence.

The study of the ductless glands, and particularly of the thyroid, has attracted the attention of pathologist, internist and surgeon alike, and as the various attempts to treat diseases of this organ medically, electrically, and otherwise have failed, we have come to recognize the fact that a diseased thyroid is a surgical condition, and that the effort to treat it otherwise is time and energy wasted.

Ochsner begins his book on the thyroid with the words: "The first decade of the present century has added the treatment of the diseases of the thyroid gland to the surgical side of our art," and I might add that the second decade has clarified our notions of this subject and put them on a more sound and rational basis.

What I wish to do tonight is not to give you a highly technical or exhaustive treatise on this subject, for any text-book will give you that, but rather to outline a few practical points and observations concerning this condition and its treatment. If some of my ideas and deductions are wrong, I hope you will disagree with me and I shall be more complimented if you do so than if you say it is a very fine paper, as we all have done so many times.

First as to the causation of goiter. We live, here in the Mississippi valley, in what one man down east aptly designated the "goiter belt." Why should the middle west have more enlarged thyroids than the east? It is true that you see more large necks on the street and more thyroidectomies in the hospitals in our part of the country than elsewhere. Furthermore, the condition is on the increase with us. I have a theory to account for this which followed a suggestion offered by my fellow-worker, Dr. Hart. Switzerland, as we all know, is the original home of goiter, and it is here that Kocher did his pioneer work in its surgical treatment. The Swiss think that the water is responsible for the prevalence of the trouble. The water, that is the drinking water, of that country is largely, I take it, of glacial origin and carries in solution certain ingredients which have this effect on the thyroid gland. We in the Mississippi valley formerly drank largely of surface water and while our fathers may have had plenty of typhoid and malarial breeding mosquitoes, yet they did not

have much goiter. As the country became more settled, we drained off our surface water and began to go deeper, with deeper and deeper wells for our supply, and have tapped the glacial drift, which, if I have not forgotten my geology entirely, covers a large portion of this part of the country. In this way, our water contains the same or similar ingredients to that of Switzerland, and hence the prevalence of the disease.

As to the pathology of the disease, we had a very learned and exhaustive treatise on that a few meetings ago by a young man who kindly came down from Chicago to enlighten us on this subject, but from a practical standpoint, I would make a much more simple classification. Goiters are either of the simple, benign type or the toxic type, and it is difficult to say where the one leaves off and the other begins. The simple may suddenly or gradually take on the characteristics of the other variety.

Judd, in a rather recent article, groups goiters into four classes:

1. Simple colloid goiters, either of adolescent type or produced by small adenomas which appear at the menopause. 2. Adenomatous pressure thyroids, with usually single large adenoma and several smaller ones. 3. Toxic goiters, including those designated as hyperplastic and also the so-called degenerating adenomas or thyrotoxicoses. 4. Malignant goiters. He further says: It is now generally conceded that most forms of goiter require surgical treatment for permanent relief. However, there is one form—the so-called adolescent goiter, which responds to medical management—and often some of the milder toxic types may be relieved without operative interference.

Groups two and three are the ones in which surgical interference gives the most benefit; in the former to relieve pressure and in the latter to get rid of the toxemia.

Bartlett of St. Louis in a recent article says, in quoting from Balfour of the Mayo clinic:

The same author (Balfour) is convinced that no distinct line can be drawn between toxic and atoxic goiters, as is shown by the following: "It is well known that goiters which for some years have produced no recognizable symptoms may gradually become associated with marked degenerative changes in other organs, particularly those of the cardiovascular system."

And Judd says in discussing the toxic group of goiters:

The thyrotoxic patient has no definite tremor though there is often nervousness from exhaustion. The pulse is that of a dilated and damaged heart and usually there is a marked increase in blood pressure. In most instances a person suffering from a thyrotoxic goiter has actual damage to the heart muscle.

There is a marked analogy in the effect produced by these goiters and that of a renal lesion. I saw in consultation a few weeks ago a patient with all the symptoms of a typical cardio-renal case and yet I am of the opinion that her condition was due to her goiter.

Really there are no benign goiters, but all possess the possibilities of making serious trouble. Goiters may produce few or many symptoms. Of course the most noticeable is the cervical enlargement and many operations are undergone simply for cosmetic reasons. Local pressure symptoms are very frequent and require relief. I have had many patients complain of difficulty in swallowing, due to pressure from the thyroid isthmus on the trachea and transmitted to the esophagus. And I am not so sure but that the classical symptom called the "Globus Hystericus" is a misnomer and credit should be given to the thyroid gland and not to the uterus for the symptom. There is another class of cases with a moderately enlarged thyroid or may be an isthmus, with "nervous" symptoms and a tachycardia without the exophthalmos and the severe toxic symptoms of Graves' disease, which need attention and these are the cases which are most apt to be overlooked. If you have a patient who is nervous, run down, with a rapid heart, whose condition you cannot account for on any rational basis, examine the thyroid and see if that is not where the trouble lies.

Any one can make a diagnosis of the typical Graves' disease with the three classical symptoms of enlarged thyroid, exophthalmos, and tachycardia, and especially if you have added the tremor, diarrhea, nausea, and delirium which accompany the later stages, but if we learn to recognize the condition earlier we have a much better chance to effect a cure and our work will be attended by a much lower mortality.

It has been my misfortune to have under observation quite recently three cases of this condition in its advanced stages: One a case in which one lobe and part of the other had been removed at the Mayo clinic, but in which the symptoms recurred and she suddenly went to pieces and died in a few weeks of acute hyperthyroidism. This case is one in which the

surgeon can not be blamed for the results as she went to Rochester about six or eight years too late and was in a serious condition when operated on. She did improve for several months but the condition finally recurred.

The second, in which we tried to check the progress of the disease by a double ligation of the superior thyroid arteries. The patient, however, became progressively worse and succumbed.

The third, in which nothing was done except to keep the patient quiet. This case also had an equally disastrous termination. These three cases have taught us the necessity for the early treatment of this condition, and in the light of recent knowledge that any goitre can become toxic, it is the duty of the physician to advise the removal of a goiter the same as he would a sore appendix.

There is a marked similarity between the recurrence of acute exacerbations of toxic thyroids and attacks of recurrent appendicitis. And as in appendicitis, the ideal time for operation is not in the attack but during the interval. Rest in bed and sedatives are the things necessary during these attacks, and the mortality is greatly decreased by waiting until the attack has subsided before operating.

There is doubtless an intimate relation between goiter and tonsils. This is particularly true of the adolescent type. We have removed tonsils with beneficial effects on enlarged thyroids, and have removed the thyroid and have had to have the tonsils removed later.

In the surgical treatment the question arises: How much or how little of the gland to remove. Formerly the answer was, to remove the diseased or enlarged portion, one lobe or the other, and possibly the isthmus. This may be well in those cases in which there is a localized cyst or a single adenoma, but in the vast majority of cases we have no assurance that we will cure our patient unless we romove a relatively large amount of the thyroid as a routine procedure. It has been the experience of the large clinics that a considerable number of cases in which only a large part of one lobe has been removed have to be re-operated on. I have never visited any of them without seeing some of these secondary operations. So it has come to be our practice to not only attack the part of the gland which seems to be most involved but to remove three-quarters to four-fifths of the entire gland by means of a double lobeecyomy or, as Bartlett terms it, a subtotal thyroidectomy. This we believe to be the ideal operation and the one which will give the best results uniformly.

Judd, in the same article referred to above, says:

> There has been considerable discussion as to the amount of the thyroid which should be removed. Extirpation of the entire gland will result in serious changes from loss of thyroid secretion. On the other hand, if a sufficient quantity is not removed, there will be a recurrence of the symptoms. However, it is comforting to know that at least experimental work on animals has shown that if a very small piece of thyroid tissue is retained with its circulation and nerve supply, myxedema will not develop. In many of the operative cases a very large part of the thyroid has been removed.

Bartlett says:

> Incomplete relief for a comparatively large percentage of toxic goiter patients after unilateral thyroidectomy, long ago convinced me that something more extensive in the way of operative therapy was indicated in many of these cases. It was then natural to add ligation of the opposite thyroid vessels and later on a partial resection of the second lobe at the time of the original operation. It was only after being driven to a considerable number of secondary partial lobectomies that I became thoroughly convinced that we must make the original operation more extensive than had heretofore been contemplated if we were to expect the complete relief of toxic symptoms in a large percentage of these patients.

It has been the practice of Dr. Hart and myself for some time to remove a large portion of both lobes, and to also remove the isthmus, with the possible exception of the posterior portion, and thus free the trachea from pressure. We had done this even before the articles of Judd and Bartlett were published, and our results have been very satisfactory both from a therapeutic and cosmetic standpoint. The operation need not be prolonged, our average time being from fifty minutes to an hour. We drain all our cases and remove the drain in from 24 to 48 hours. No muscles are cut except the platysma, which adds largely to the comfort of the patient. The patient sits up the second day and usually leaves the hospital at the end of a week. I think the average goiter case has no more discomfort than the average tonsillectomy.

As to the anesthetic, I have seen different operators use various methods, from the com-

plicated anoci association of Crile to the straight ether as used at Rochester, though I believe they are now using ether and novocain there, also local anesthesia in New Orleans and also by Bainbridge of New York, who uses some novocain and more argument and tries to make his patient believe he is not being hurt.

For my own part, I am convinced that ether by the drop method, with morphin 1/6 and atropin 1/150 thirty minutes before is the most satisfactory anesthesia. We use no strained or extended position of the head or neck, but instruct the anesthetist to get his patient in a position where she will breathe comfortably and we adapt ourselves to him and the patient, rather than putting the patient in a position with the neck on a stretch and the trachea pressed upon. We have never had any trouble with anesthesia since we adopted this method.

In conclusion, I would summarize as follows:

1. Practically all thyroid enlargements are surgical, and if not actually toxic are potentially so.

2. Operate early or in toxic cases in the interval between attacks to obtain results.

3. Be sure to remove enough of the gland to prevent recurrence.

I wish to show one specimen of a large cystic goiter. This is from a woman 60 years old who had it for forty years. For ten years she had been unable to lie down naturally in bed but had to allow the goiter to hang over the edge of a pillow. It is interesting to know that each of her four daughters also has a goiter, one of whom we have operated on. We anticipated all sorts of trouble in the operation and even had Dr. Fox with us to perform tracheotomy in event of collapse of the trachea. The operation fortunately went through without any untoward incident, the only difference being that we took a little more time than usual.

NITROUS OXIDE ANALGESIA IN OBSTETRICS.*

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CHICAGO

The medical profession is greatly indebted to the dentists for their development of the art of anesthesia, particularly in so far as the use of nitrous oxide gas is concerned. Employed at first in the extraction of teeth, even as early as 1844, it has been extensively used for many years in teeth extraction and later still has been much employed to relieve pain in dental filling. In general surgery, its introduction progressed slowly because its uses and limitations were not well understood.

The latest employment of nitrous oxide has been in the hands of the obstetricians, who are even now just beginning to appreciate its merits. Dr. J. Clarence Webster has made use of it for a decade or so, finding a place for it in Cesarean section, forceps delivery, etc., as no doubt others also have done.

The first case of obstetrics where nitrous oxide was employed *ab initio* to produce prolonged *analgesia*, in contra distinction to *anesthesia for operation*, of which I have any knowledge, was that of the daughter of Hon. A. C. Clark, a manufacturer of dental apparatus and machines for administering nitrous oxide, who has been instrumental in extending the uses of gas in dentistry, surgery and finally obstetrics. I attended Mr. Clark's daughter when she was confined at her father's home, on July 13, 1913. Dr. Frank Lynch, formerly of Chicago and now of San Francisco, was called in by me to this case after the patient had been taking the gas for four or five hours and he reported this use of nitrous oxide, to him a novel one, in a paper read by him before the Chicago Medical Society, March 24, 1914.

As I have made no previous report of this or any other case of obstetrics conducted by me with the assistance of nitrous oxide, I wish to state at this time some other circumstances associated with this, my first case, as well as to allude briefly to my second case conducted under similar circumstances. Mr. Clark's family had been patients of mine for many years and I had had several obstetrical experiences in their home. Shortly before his daughter's confinement he asked me whether I would object to the administration of nitrous oxide to his daughter during her labor, the gas to be given by competent hands, he himself offering to be answerable for all results. I readily consented to this proposition and the gas was given by Mrs. Luther, who had been in Mr. Clark's employ, was experienced in its applica-

*Read before South Side Branch Chicago Medical Society, Dec. 20, 1917.

tion and who gave it well in this instance. We were all pleased with the results obtained and a few months later Mrs. Clark, the mother of the young lady referred to above was also attended by me, the gas again being administered by Mrs. Luther and with similar pleasing results. Not long after this Mr. Clark kindly placed at my suggestion, in St. Luke's Hospital, one of his gas machines, in order that I might make further use of it and bring it to the attention of others. For a long time I found difficulty in reconciling the hospital authorities to the use of this machine, which became known as my machine; but after it had been there for about two years it was purchased by the hospital, which had meanwhile bought several others of Mr. Clark's make.

I have made no careful tabulation of my cases conducted under gas analgesia, but I am making more extensive use of it now than previously and have formed pretty definite opinions concerning its value. Dr. Lynch, having been greatly impressed with the possibilities of nitrous oxide, soon interested his colleagues in the Presbyterian Hospital as well and was perhaps the first to set forth opinions based upon a sufficient number of cases to merit careful attention. Dr. Carl Davis has summed up his experiences in a meritorious brochure entitled "Painless Childbirth, Eutochia and Nitrous Oxide Oxygen Analgesia." Dr. N. S. Heaney and Dr. H. C. Allen of Brooklyn, have also published articles on this subject. There are various other publications which I might cite, but when all is said the truth remains that there is still comparatively little literature on this subject, though I am sure there will be plenty in the near future.

What particularly impresses me at this time is that obstetric analgesia is not yet well understood by obstetricians themselves; that its value is underrated; that it is seldom properly administered and that it never will be until it is placed in proper hands. In general surgery a few years ago the gas was given tentatively, gingerly and inadequately. At present it is freely given and with happiest results. If I personally had to endure prolonged and painful dentistry, I certainly should look to the gas for help.

I undertake to assert that already those enthusiasts who were first to publish their experiences with the analgesia of obstetrics will have by this time modified to some extent their views regarding the best methods of its application and that in their future publications we shall find somewhat different advice from that first given by them.

My confession of faith in obstetric analgesia is about as follows:

I believe we have allowed our patients in the past to suffer unnecessarily and that in the future we can conduct labor cases *tuto, cite et jocunde,* as the old writers used to say, by the use of morphine (and chloral if we choose) early in labor and nitrous oxide with a little oxygen later on, employing in some cases a modicum of ether when we have operative work to do. I believe prolonged gas analgesia, say for six or eight hours, is perfectly safe for healthy patients, if properly managed. I believe gas does not prolong labor, but tends to shorten it and does not lead to physical depression and post partum hemorrhage. As a corollary to the last proposition, it may be stated that the prolonged use of chloroform and ether is distinctly dangerous. I disagree with those who say that the technique of gas analgesia is so simple that it readily may be entrusted to a nurse or a member of the patient's family. Such a procedure may not be dangerous, but is unproductive of good results. The proper technique can only be learned by very considerable experience, the best results being only obtainable by experts. I believe that obstetric analgesia is more difficult than surgical anaesthesia with gas. I believe that in hospital obstetrics gas should be given in most cases, but only by experts, just as now obtains in the operating room for general surgical cases. Most of all we should have experts when we care for obstetrical patients in their homes. I believe most women who have had gas administered to them have experienced some relief, but not what was their due. I believe that very little oxygen is required and that all along we have been using too much of it. I believe that in obstetric analgesia the re-breathing bag makes only for a small economy and is in some respects objectionable. I believe there is little or no danger of asphyxia to the child, but that if it is born asphyxiated, the condition can be relieved by giving oxygen through the mother to the child by the simple expedient of leaving the funis untied until oxygen has been administered freely to the parturient mother.

In concluding this part of my subject, I wish to point out that interns who make only occasional use of the gas, are not satisfactory anesthetists and that they are, through their unfamiliarity with the proper use of the gas, very wasteful of it being mainly responsible in hospitals for the complaints we hear regarding the cost, which is not great under proper control.

I was surprised to learn recently that in one of our best hospitals obstetric analgesia was considered largely a joke consisting, as I was informed, of the administration of a few whiffs of oxygen with slight admixture of nitrous oxide, begun shortly before the end of the second stage of labor, actual delivery being under ether or chloroform. I consider myself fortunate that in my first experience I had a good operator at the machine and I would advise all who mean to use this great boon, to start out right by witnessing a properly conducted case in order to possess a criterion with which to compare their subsequent experiences in gas analgesia.

As for the daemmerschlaf, I do not feel it necessary to say much. The American public was misguided by unofficial reports which emanated from the laity. The daemmerschlaf never had much vogue in Germany except in one small hospital. I confess that at one time I was prepared to take stock in it and in 1914 had as one of my objects in going abroad that of making a pilgrimage to the home of the daemmerschlaf, Freiburg, but the outbreak of the war stopped me on the edge of the English Channel. The plan of conducting labor under the influence of scopolamine and morphin was not without value, as it produced excellent results in some cases. Among its objections are these: It required unusual surroundings including quiet, exclusion of friends and shutting out of light; it involved unusual attentions on the part of physicians and nurses, in the way of regulation of doses and in the direction of preventing the patients from doing themselves injury, as they were apt to become hysterical or even maniacal; it appears to have prolonged labor and to have endangered the life of the child; it was largely an illogical procedure, in that it depended for its results not upon anesthesia or analgesia, but upon amnesia; complete amnesia having been produced, if the patient merely became for the time being a maniac, tearing her hair, shrieking, running about and trying to jump out of the window, but at the finish gave birth to a healthy child and survived, the case was considered a brilliant success, provided the patient retained no recollection of what had transpired. When the obstetricians of Michael Reese Hospital made their last report, I felt that the book was sealed and have never since felt an impulse to break the seals.

4669 Lake Park Avenue.

CURVED NEEDLE INCISION IN VACCINATION, A NEW TECHNIQUE

WILSON RUFFIN ABBOTT, M. D.
CHICAGO.

I confess it is with some diffidence that I present for your consideration this evening a paper upon a subject that has been so thoroughly discussed, seemingly from every angle, by men of the highest eminence and professional attainments, and were it not that I believe that in the technique I have evolved I have something of real value to offer the general practitioner, I would not intrude upon your time even for the few moments I shall take to describe and set forth its merits.

It might be well before entering into the description of my method for us to consider for a moment the essential factors that enter into a successful inoculation. A moment's reflection and you will agree, I believe, that given a good vaccine, the essentials are, first, a correct technique, and second, the co-operation of the patient.

The former is dependant upon (a) the knowledge, as set forth by Ewing, that the vaccine virus has an exclusive preference for the epithelial cells, the albumin of which it requires for its propagation, and (b) the histological anatomy of the skin.

By way of refreshing our memory concerning some facts which may have been forgotten, I will, for our purpose, divide the skin into two principal layers. An outer avascular epithelial layer called the cornium and an inner vascular layer called the corium. The lymph circulates in the intercellular spaces of the epithelial layer, whereas, in the connective tissue layer, it circulates in true lymphatics. The epithelial layer must again be divided into an outermost or cornified layer, and an innermost or mucous layer.

We will not dwell upon the cornified layer

*Read before the North Shore Branch, Chicago Medical Society, November 6, 1917.

longer than to note these three highly important characteristics: 1. That it is extremely thin over the flexor surfaces, measuring not more than a fraction of a millimeter in thickness, and because of this extreme thinness one must exercise great care in incising by the usual methods if he would

Fig. 1. Shows needle pressed firmly against skin—tilted slightly towards its eye and laterally.

avoid penetrating the papillary layer. 2. That it is impervious and therefore must be penetrated. 3. That it is insensitive, therefore its penetration should be devoid of sensation.

Now for a moment, let us direct our attention to the mucous layer which, as we have just noted, lies directly under the outermost cornified layer and just above the vascular connective tissue papillary layer. On microscopical examination of this mucous layer, we notice that it is made up of typical epithelial cells, that there is an appreciable clear space between these cells, and that each cell is joined to its neighbor by bridges that span the clear space. It is these clear spaces lying between the cells that form the lymph channels. It is here that the lymph circulates and furthermore—this is of greatest importance—it is here that the variolus vaccine should be deposited and *not* in the blood containing connective tissue papillary layer of the underlying corium.

As I have already pointed out, the tissue underlying the mucous layer is the corium. It is composed of connective tissue and assumes importance to us only because it must not be penetrated. It is composed of several layers of which we shall consider one only, the outermost or papillary, this is so named from its papillae which project digital-like up into the under surface of the mucous layer. These papillae contain venules, arterioles and lymphatics. It is from this layer that the epidermis obtains its nourishment.

Next to a physician's wish for a successful inoculation is his hope that the patient will cooperate with him in the work to which he has set his hand. Of course with the adult and those children of mature age, one seldom experiences any difficulty. This cannot be said, though, in regard to the "Tiny Tots," and indeed, I hold a suspicion, that none of us are quite indifferent to having our skins punctured, drilled, or incised. It was, however, for these little ones that I set myself to devising some method that would be devoid of the embarrassments that sometimes beset us when we attempt to vaccinate by the generally accepted methods now in use.

By common consent four methods of vaccination have come to be accepted as giving satisfactory results; they are—scarification, either by drill or by puncture, or by incision—Jenner used

Fig. 2. Finishing the stroke. By rotating the wrist the needle has been swept from forceps to point.

the latter two. Cross-scarification and injestion are mentioned only to be condemned.

Curved Needle Technique:

Having prepared the skin, the procedure is as follows: I lock firmly in the jaws of a good

needle holder a surgeon's curved, stout, cutting-needle—just as one does when he is about to take a stitch—(the needle that I seem to prefer is the one catalogued as No. 15). Next I grasp the arm firmly in the saddle of the hand and with the thumb and first two fingers, draw the skin *very* tense, a most important detail, neglect of which may cause failure: now I press the convex surface of the needle firmly against the skin using considerable pressure, and at the same time, tilt the needle slightly so that the cutting edge makes a trough-like indenture (see cut 1); then, by a rapid rotary movement of the wrist, I sweep the needle from forceps to point maintaining a firm, even pressure throughout (see cut 2).

If this maneuver has been correctly performed, there will be a fine hair-line incision just through the cornfield layer about ½-inch in length which, according to the British authorities, is the ideal. There is no pain. There is no blood. The child does not know that the dreaded part of the vaccination is over. I now take a fresh grip upon the skin and retract the margins of the incision. Usually by this time, serum has welled up into the trough, or if one has cut down above the crest of a papillae, a shell pink bottom may come into view.

My next step is to feed the vaccine, either directly from a capillary tube or indirectly by means of a freshly whittled stick or toothpick, into the wound.

The dressing is a strip of gauze held in position by adhesive plaster.

I have used this method for the past two years to the exclusion of all others, and I present it to you with a confidence born of conviction that it will not be found wanting. As a final word the merits I claim for it are:

1. It is highly efficient.
2. It is painless.
3. It is bloodless.
4. It is rapid.
5. It is economical.
6. It awakens no fear in the mind of the child.

4700 Sheridan Road.

WAR EXPENSE AND LIBERTY BONDS

When Germany's new war loan is floated the empire's total indebtedness will be $31,000,000,000, which means that each one of her 68,000,000 inhabitants, men and women and children, will be in debt $456. Here in America, with a population of 110,000,000, our total indebtedness, if only $6,000,000,000, or a per capita indebtedness of only one-eighth that of the German citizen, a matter of $57 each. We can run our Liberty bond floatations up to $50,000,000,000 before each one of us owes as much as each German across the Rhine.

In other words, we can run this war at our present rate of expenditure for eight years before we are as bad off as the Germans are today. Don't be frightened at the money we are spending. We are not "breaking" ourselves. We are spending very little of our national wealth. Buy bonds. If this war lasts for eight years, Germany will be so badly "broke" it can never be put together again.

WHY YOU MUST BUY LIBERTY BONDS

War is a glutton that lives on lives and riches. There is no limit to the devouring greed of War. As long as there is an unconquered life, or an undevoured dollar, War is hungry.

When War attacks a Nation there is no choice—every able-bodied man knows that he must fight—now or later. Selective drafts may miss a man here and there for a few months, but if the War goes on a time comes when every man who can walk and carry a gun must go to the colors and fight for the very life of his country, his family, himself.

When War attacks a Nation there is no choice—every dollar is subject to the call of mobilization. Some of the dollars escape for a time and stay in their safe investment places earning profits for their owners. But if the war goes on long enough, every dollar must come out and enlist under the colors.

In time of War, when the very life and death of a Nation is being decided on bloody fields, money has no choice between courage and cowardice. Every dollar must fight or be classed as traitor and put in the outlaw list.

Remember these things. The Nation has a right to take absolutely every dollar of property in the United States for the life and death War against Tyranny, Autocracy, Slavery and Foreign Aggression and Vassalage. But the Nation does not intend to exercise that final and desperate right. No! The Government says: "The Nation is fighting for its life. Lend us your money. We will give you LIBERTY BONDS, secured by all the wealth and sovereign taxing power, bearing 4¼ per cent interest, and protected by a good sinking fund, with tax exemptions to make the loan better. Avoid the extreme necessity. INVEST IN ALL THE LIBERTY BONDS YOU CAN."

DO YOU KNOW THAT

The little house fly is a dangerous thing. The time to "swat 'em" is in the spring.

The ingestion of wood alcohol may produce blindness?

Human beings are the great agencies in the spread of human diseases?

No community can be really successful without safe waste disposal?

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APRIL, 1918

Editorial

Go *back* to the *simple* life, be contented with *simple* food, *simple* pleasures, *simple* clothes. Work hard, pray hard, play hard. Work, eat, recreate and sleep. Do it all courageously.

We have a victory to win.

—HOOVER.

Have you purchased your Liberty Bonds. Now is the psychological moment.

THE ANNUAL MEETING

The time is drawing near for the annual meeting, and our members should all make a special effort to attend this year. The attendance in the nature of things will not be as large as that of last year—thanks to our Prussian enemy—but those men not in the service should make more effort to attend because of this.

The officers of the Society have offered an attractive program, and the readers of papers deserve an audience of large size. Aside from this the doctor needs the time away from routine business.

Take a little vacation and visit the capital of your state. Springfield is an attractive place to go, is centrally located, will treat you royally, and reward you for your trouble. The officers of the Society hope to meet you all on May 21st.

PATRIOTIC DINNER GIVEN BY THE AUX PLAINES MEDICAL SOCIETY

The Aux Plaines Medical Society gave its annual ladies' night on the evening of April 4th, in the form of a patriotic dinner in honor of the thirty medical men, members of that Society, who have enlisted in the Medical Reserve Corps. About two hundred people attended.

After dinner the toastmaster, Dr. C. M. Pohl, introduced the speakers, among whom were Dr. E. B. Coolley, President of the Illinois State Medical Society; Dr. C. E. Humiston, President of the Chicago Medical Society; Capt. Harold Parke, Canadian Contingent; Rev. Wm. E. Barton; Judge Mancha Bruggemeyer and Dr. A. M. Corwin, who read one of his own poems, "Our Service Flag."

There was great enthusiasm manifested as portraits of members of the Medical Corps were shown. Miss Ethel Woodstock rendered several patriotic readings in a manner indicating clearly there was no slacker blood in her veins.

Drs. F. L. Glenn and H. J. Stewart were largely responsible for the affair, and owing to their enthusiastic effort it was highly successful.

AMERICAN MEDICAL ASSOCIATION

The profession of Illinois will have an excellent opportunity to attend the annual meeting of the American Medical Association to be held in Chicago, June 10-14, 1918. The members from Illinois should all attend this year. Chicago is expecting you, and will take care of all comers. The clinics and scientific meetings will be equal to a short post-graduate course. Make your arrangements to attend. Read the announcement on another page.

Illinois State Medical Society

PRELIMINARY PROGRAM.

SIXTY-EIGHTH ANNUAL MEETING,

Springfield, May 21, 22 and 23, 1918.

SECTIONS 1 AND 2.

Oration on Military Medicine and Surgery, "The Call of the Service"—Col. Henry I. Raymond, M. C., U. S. A., Chicago.

Oration on Surgery—Wm. O'Neill Sherman, Pittsburgh, Pa.

Imperforate Anus and Imperforate Rectum. (Lantern slides)—J. Rawson Pennington, Chicago. Discussion—Maxmilian Hubeny, Isaac A. Abt and Paul Gronnerud, Chicago.

Hypertrophic Pyloric Stenosis—C. Wallace Poorman, Oak Park. Discussion—J. W. Vanderslice, Oak Park and J. V. Fowler, Chicago.

A Plea for the Early Diagnosis and Treatment of Tuberculosis of the Kidney—Daniel N. Eisendrath, Chicago. Discussion—A. D. Bevan, Chicago, and F. Buckmaster, Effingham.

Surgical Treatment of Kidney Tuberculosis—Herman L. Kretschmer, Chicago. Discussion—A. D. Bevan and L. E. Schmidt, Chicago.

Operation for Fasciæ Repair in Cystocele—Paul Gronnerud, Chicago.

———————E. S. Murphy, Dixon.

Parotitis as a Sequela of Abdominal Operations—C. U. Collins, Peoria.

The Radical Removal of the Cancerous Breast by Cautery Heat—J. F. Percy, Galesburg.

Fractures of the Lower End of the Radius—S. M. Miller, Peoria.

Diagnosis and Treatment of Pyloric Stenosis, Demonstrated by Movie Film—H. M. Orr, La Salle.

Nephritis: Diagnosis, Treatment and Prognosis, Showing the Inadequacy of Our Physical and Pathological Interpretation of Clinical Symptoms—M. Stealy, Freeport.

Physical Fitness; Lessons from the Draft—E. Mammen, Bloomington.

Oration on Medicine—C. F. Hoover, Cleveland, Ohio.

President's Address—E. B. Coolley, Danville.

Trombosis of the Coronary Artery—James B. Herrick, Chicago.

Auricular Fibrillation—James C. Carr, Chicago.

Treatment of Mercurial Poisoning — Bernard Fantus, Chicago.

Present-day Indications for Splenectomy in Pernicious Anemia and Allied Conditions—A. F. Beifeld, Chicago.

Cardiovascular Syphilis, C. L. Mix, Chicago.

Etiology and Bedside Experience With Milk Sickness—A. J. Clay, Hoopeston.

Data Obtained from a Complete Study of 67 Cases of Gastroptosis — Albert R. Trapp, Springfield.

The Menopause from the Standpoint of Mental Disorders. (Clinical Reports. Lantern) — Frank P. Norbury, Jacksonville.

Some Points of Interest for the Internist in X-Ray Interpretation—Damon A. Brown, Peoria.

Treatment of Acute Articular Rheumatism—F. J. Mittan, Decatur.

A Study of the Physical Condition of Six Hundred Registrants in the Selective Draft of 1917—Charles B. Johnson, Champaign.

SECTION ON PUBLIC HEALTH AND HYGIENE.

The Practice of Preventive Medicine—William S. Sadler, Chicago.

Public Health Administration in Illinois Under the New Civil Administrative Code—C. St. Clair Drake, Springfield.

Tuberculosis, the Period of Profound Peril—Katherine B. Rich, Chicago.

Relation Between Public Health-Tuberculosis and Medical Education—Walter B. Metcalf, Chicago.

Meeting the Tuberculosis War Problem of Illinois—George T. Palmer, Springfield.

Warding Off Old Age—Charles J. Whalen, Chicago.

SECTION ON EYE, EAR, NOSE AND THROAT.

What Results May We Expect from Tonsillectomy and Adenectomy—Charles F. Burkhardt, Captain M. R. C., U. S. A., Effingham. Discussion—Arthur M. Corwin, Chicago.

Ophthalmic Examination of Aviators—Charles P. Small, First Lieutenant, M. R. C., U. S. A., Chicago. Discussion—Francis Lane, Captain, M. R. C., U. S. A., Chicago.

Some Eye Injuries That Can Be Prevented—Willis O. Nance, Chicago. Discussion—William L. Noble, Chicago.

The Instruction in Plastic Surgery About the Head and Neck (Stereopticon)—Joseph C. Beck, Chicago. Discussion—Ira Frank, Chicago.

The Etiology and Diagnosis of Sinus Disease

(Stereopticon)—Richard J. Tivnen, Chicago. Discussion—John A. Cavanaugh, Chicago.

The Treatment of Nasal and Accessory Sinus Disorders—Otto J. Stein, Chicago. Discussion—Frank Brawley, Chicago.

Personal Experience With the Operation for Senile Cataract—Frank Allport, Chicago. Discussion—J. Brown Loring, Chicago.

Septal Deformities, Modification of Freer's Operation—B. F. Andrews, Chicago. Discussion—Otto T. Freer, Chicago.

Arteriovenous Aneurysm of the Orbit—George W. Boot, Chicago. Discussion—Oliver Tydings, Chicago.

Focal Infections in Relation to Diseases of the Eye—Thomas Faith, Chicago. Discussion—Clarence Loeb, Chicago.

The Management of Tonsillar and Adenoid Hemorrhage—Henry R. Boettcher, Chicago. Discussion—Joseph Z. Bergeron, Chicago.

Traumatic Ptosis, Modified Motais' Operation—H. W. Woodruff, Joliet. Discussion—George W. Mahoney, Chicago.

On the Value of Localization of Magnetizable Foreign Bodies in the Eye—John R. Hoffman, Wilmette. Discussion—Nils Remmen, Chicago.

Treatment of Otosclerosis from An Etiological and Pathological Standpoint—Harry L. Pollock, Chicago. Discussion—J. Holinger, Chicago.

Middle Ear Infections—C. E. Price, Robinson. Discussion—A. H. Andrews, Chicago.

Status Lymphaticus—Edward F. Garraghan, Chicago. Discussion—T. J. H. Gorrell, Chicago Heights.

Conservation Treatment of Eye Injuries—H. H. Roth, Murphysboro. Discussion—C. H. Francis, Chicago.

A Further Report on Ophthalmia Eczematosa—Michael Goldenburg, Chicago. Discussion—H. H. Brown, Chicago.

Laryngeal Tuberculosis—J. Niess, Carmi. Discussion—George A. Torrison, Chicago.

A Case of Multiple Sclerosis With Eye Findings—E. R. Crossley, Chicago. Discussion—Charles L. Mix, Chicago. (By invitation.)

EYE, EAR, NOSE AND THROAT SECTION

Clinic—Eye, Ear, Nose and Throat Section:

On Tuesday morning, May 21st, as has been the custom, this section will have a clinic at St. John's Hospital beginning promptly at nine o'clock. In the forenoon, ear, nose and throat cases will be demonstrated and operated upon, and in the afternoon the eye cases will be treated and operated upon. These clinics will be conducted by some of the ablest clinicians in the state and have always proven worthy of a large attendance. This year will be no exception. Any physician in the state who is a member of the state society, and who wishes to present any cases, is cordially invited to make arrangements with Dr. John F. H. Deal, Leland Office building, Springfield, Ill., who is chairman of arrangements for the meeting of the Eye, Ear, Nose and Throat Section, in that city. Luncheon will be served at the hospital from twelve to one for all members.

BANQUET. Tuesday evening, at 6:30 o'clock, there will be a banquet at the Leland Hotel. Tickets will be $2.50 per plate. There will be music, oratory and general good fellowship in abundance and an excellent dinner, such as only the Leland can provide. It is one of the great privileges of the year to be present at these splendid affairs and enjoy the fellowship of your colleagues. Please send your check for a reservation to Dr. John F. H. Deal, Leland Office Building, Springfield, Ill., who is chairman of arrangements for the banquet.

PROGRAM. Wednesday morning at nine o'clock, May 22nd, the Scientific Program of the Eye, Ear, Nose and Throat Section will open at the Leland Hotel, and continue until twelve o'clock, when an intermission will occur for dinner, until one-thirty o'clock, the session will then resume and continue until five o'clock. The program which has been prepared with the greatest care will present the most interesting and important phases of progress in our specialties. You are urgently requested to be present and participate in this meeting which has proven an inspiration to all and amply repaid those who have made the effort to attend heretofore. The presentation of papers will be limited to ten minutes, and the opening discussions to three minutes.

DR. J. SHELDON CLARK, Chairman.
Freeport, Ill.
DR. WESLEY H. PECK, Secretary.
31 N. State St., Chicago.

NORTHWESTERN UNIVERSITY ALUMNI

In view of the uncertainty as to attendance of Northwestern University graduates at the coming State Meeting in May, it is urgently requested that any who contemplate attending, make definite arrangements to be present at the Annual Alumni Banquet, which will be held May 23, at 12:15 o'clock noon, at the St. Nicholas Hotel. The very best price obtainable for the luncheon or banquet this year is one dollar and a half and the Hotel requires advance information regarding the number who will be present. For this reason it you are desirous of attending, kindly forward name and remittance to the undersigned at an early date advising whether you wish ticket returned to you or held for you to be delivered upon your request Tuesday, May 21, when you register.

Signed Dr. T. J. Kinnear,
510 Ridgely Bldg.,
Springfield, Ill.

DUST AND AIR BORNE DISEASES

This is the time of year when perhaps the air-borne diseases are most prevalent. We probably will have to except those wide-spread epidemics of influenza, which more often come during the winter. City dwellers and residents of villages are just now undergoing an unusual epidemic of throat and bronchial infections. That these infections are due directly to the unusual amount of street dust in the air, no one will deny. The accumulation of dirt, dust and filth, composed largely of dried sputa and other animal excreta of months is now on the streets and alleys. A few days' sunshine and strong wind and much of it is in the air. In a day or two numbers of cases of infected eyes and throats, cases of bronchitis and pneumonia begin to appear, and always there are more or less fatal results from these epidemics of infections.

That this happens is not in itself strange, but the strange thing is that nothing is done to prevent the condition being repeated time and time again. Health Departments have done almost nothing except to remark about it, and perhaps try to impose a few more highly colored cards on doors indicating quarantine.

In Chicago, where owing to its large size, there is so much dust, some decided effort should be made to eliminate this menace to the health of the people. The archaic method of street cleaning is so objectionable that one can but wonder why it has so long been tolerated. Much of the street cleaning done at the present time does little more than dry the dust so that it blows more readily.

A number of years ago Chicago was given a drainage canal, which increased the efficiency of the sewerage system by taking the sewage away from the drinking water. The result is that typhoid fever and acute bowel infections, once so prevalent here, have been practically eliminated. If the same effort were made to do away with the street dust, the result probably would be such as to compare favorably with the results of better drainage. With Chicago's water supply and drainage system there should be no difficulty in washing the streets.

Removing the causes will prevent diseases. Removing the dust from the air we breathe would probably result in decreasing very materially our throat and bronchial infections. If in addition to this the air in our street cars was safe for human breathing, we would have a wonderful change in statistics of respiratory diseases and also in our mortality statistics.

YOUR COUNTRY CALLS YOU.

Colonel Robert E. Noble, M. C., U. S. Army, the Chief of the Personnel Division of the Surgeon-General's office, has done wonderful work in this war by organizing a body of 15,000 Medical Reserve Corps officers and bringing them to a high degree of efficiency. Colonel Noble, however, says: "We need medical officers, more medical officers, and yet more. We not only must provide medical officers with all tactical units, but must supply ambulance service, field and evacuation hospitals, hospital trains, base hospitals, convalescent, general and now reconstruction hospitals." To date only one physician in ten has been commissioned. We need to double that percentage.

Now, Doctor, ask yourself this question: "Is it not my duty to serve my country in this hour of need to the best of my ability?" There can be but one reply. *Answer the call!*

The undersigned will be glad to receive your

application and give you any further information.

ED. J. DOERING, Major, M. R. C.
President, Board of Medical Examiners,
U. S. Army,
81 East Madison St., Chicago.

CLINICS.

It is announced that in the future the members of the Chicago Laryngeological and Otological Society will give clinics at various Chicago hospitals on the third Monday and Tuesday of each month, preceding the regular monthly meeting of the Society on the third Tuesday evening. These clinics will be open to anyone who wishes to attend and information concerning them can be obtained by writing or telephoning.

Dr. EDWARD P. NORCROSS,
304 Michigan Boul. Secretary.

GRIT YOUR TEETH AND BUY A BOND.

Casualty lists are being printed in the papers and occasionally we see pictures of our wounded at the hospitals in France. War is being brought home to us in the Middle West. We know now that Americans are fighting over there and this third Liberty Loan should find us more willing than ever before, and more eager, to contribute our share toward defeating the kaiser.

The boys are working the guns. Here we must work the farms and the factories and furnish the money. Buying Liberty bonds is now as much our duty as it is their duty to grit their teeth and beat the Hun to it with the bayonet thrust when the charge comes.

THEODORE B. SACHS TUBERCULOSIS STUDY CLASS

FREE COURSE OF LECTURES
TUBERCULOSIS IN RELATION TO MODERN PROBLEMS
Under Auspices of
THE CHICAGO TUBERCULOSIS INSTITUTE
8 South Dearborn Street—Telephone Central 8316
Given at the
CITY CLUB OF CHICAGO, 315 PLYMOUTH CT.
Thursdays at 6:30 P. M.

Dr. Max Biesenthal, Chairman

March 21—"The Press and Tuberculosis," Dr. W. A. Evans.

March 28—"The Red Cross and Tuberculosis," C. C. Stillman.

April 4—"United Charities and Tuberculosis," Eugene T. Lies.

April 11—"The War and Tuberculosis," Dr. Geo. T. Palmer

April 18—"Occupation for Disabled Soldiers With Special Reference to Tuberculosis," John E. Ransom.

Following the speaker, there will be a general discussion on the subject presented.

All persons interested are cordially invited to attend.

AMERICAN MEDICAL ASSOCIATION NEWS.

THE CHICAGO SESSION.

COMMITTEE ON ARRANGEMENTS.

The local committee on arrangements for the annual session of 1918, to be held in Chicago, June 10-14, is actively engaged in perfecting plans for the comfort and entertainment of the fellows of the association and their guests.

All correspondence with the local committee on arrangements or with any of its subcommittees should be addressed to 25 East Washington St., Chicago.

CLINICS.

The chairman of the subcommittee on clinics, Dr. Charles F. Humiston, announces that there will be a series of clinics for the Fellows of the Association on Thursday, Friday and Saturday, June 6, 7 and 8, and on Monday and Tuesday, June 10 and 11.

ALUMNI AND SECTION DINNERS.

Alumni and section dinners will be held on Wednesday evening from 6 to 8 o'clock so as not to conflict with other events which are being planned. The chairman of the subcommittee on alumni and section entertainment, Dr. J. H. Stowell, announces that his committee is co-operating with officers of alumni associations in arranging for reunions. The committee desires, also, to assist the officers of those sections which desire to arrange for section dinners.

HOTEL HEADQUARTERS FOR THE CHICAGO SESSION

The following hotels have been tentatively designated as general and section headquarters for the Chicago session, June 10 to 14:

General headquarters: Hotel Sherman—North Clark and West Randolph.

Practice of Medicine—Hotel Morrison, 83 W. Madison.

Surgery, General and Abdominal—Auditorium Hotel, 430 South Michigan.

Obstetrics, Gynecology and Abdominal Surgery—Congress Hotel, South Michigan and Congress.

Ophthalmology—Hotel La Salle, La Salle and West Madison.

Laryngology, Otology and Rhinology—Hotel La Salle, La Salle and West Madison.

Diseases of Children—Congress Hotel, South Michigan and Congress.

Pharmacology and Therapeutics—Auditorium Hotel, 430 South Michigan.

Pathology and Physiology—Auditorium Hotel, 430 South Michigan.

Stomatology—Congress Hotel, South Michigan and Congress.

Nervous and Mental Diseases—Blackstone Hotel, South Michigan and East Seventh.

Dermatology—Blackstone Hotel, South Michigan and East Seventh.

Preventive Medicine and Public Health—Auditorium Hotel, 430 South Michigan.

Genito-Urinary Diseases—Auditorium Hotel, 430 South Michigan.

Orthopedic Surgery—Congress Hotel, South Michigan and Congress.

Gastro-Enterology and Proctology—Auditorium Hotel, 430 South Michigan.

Scientific Exhibit, Registration Bureau, Commercial Exhibit, Information Bureau and Branch Postoffice—Hotel Sherman, North Clark and West Randolph.

Correspondence

UNITED STATES FOOD ADMINISTRATION.

WASHINGTON, D. C.

March 19, 1918.

TO THE EDITOR: As you are aware there is urgent need for the country to use with the utmost care, our stocks of sugar, alcohol and glycerin. It has come to our attention through the work of Professor Wimmer of New York and Mr. F. A. Upsher Smith of St. Paul, Minn., that it is possible to reduce largely the amount of these materials used in medicines by the adoption of infusions, decoctions and solid forms of medication, such as capsules, in place of elixirs, syrups, fluid extracts and tinctures.

As the choice of medicine rests with the physician, we feel that the extent to which this conservation program is successful rests largely with the physician, and we urge upon physicians throughout the country the desirability of prescribing extemporaneously wherever possible.

It is really desirable that the editors of pharmaceutical and medical journals, deans and professors of colleges, and secretaries of state, county and city associations should see that the matter is fully discussed at meetings of physicians and druggists and should do all within their power to assist this conservation movement, which cannot fail to be of material assistance to the country since "Food Will Win the War."

May we depend upon you for your active cooperation in this matter?

Yours very truly,

UNITED STATES FOOD ADMINISTRATION,
CHARLES W. MERRILL,
Division of Chemicals,
Sisal and Jute.

WAR DEPARTMENT

OFFICE OF THE SURGEON GENERAL
WASHINGTON.

MEMORANDUM to Editors of Medical Publications:

March 27, 1918.

To the Editor: Attention is directed to the inclosed memorandum issued by this office to medical officers of the Army.

The large number of medical officers recently joining the medical department direct from civil life, and unfamiliar with the army regulations governing the publication of scientific papers, has resulted in a number of papers being published in various journals without authority from this office.

Editors of medical publications are requested to co-operate with this office in impressing upon medical officers the necessity for compliance with the inclosed memorandum.

It is requested that papers received from medical officers in the service which do not show that they have been referred to this office, and authority for publication granted by the Surgeon General, be forwarded direct to this office in order to obtain this authority.

In authorizing the publication of a paper this office does not necessarily signify its accordance with views or opinions expressed therein. It is, therefore, requested that editors refrain from appending any note or legend expressing the formal authorization of this office.

By direction of the Surgeon General.

(Signed) C. L. FURBUSH,
Lieutenant Colonel,
Medical Corps, N. A.

MEMORANDUM TO DIVISION SURGEONS:

1. Attention of medical officers is directed to the provisions of paragraph 423, M. M. D.—"Medical Officers will not publish professional papers requiring reference to official records or to experience gained in the discharge of their duties without the previous authority of the Surgeon General."

2. Numerous scientific papers written by officers of the medical department have recently appeared in the medical press without specific authority from this office. This practice will be discontinued, and the above regulation will be strictly complied with.

3. Officers desiring publication of professional papers will submit two copies to the Surgeon General with request for permission to publish same. Upon approval, a copy will be forwarded to the journal designated by the officer for publication.

By direction of the Surgeon General:

C. L. FURBUSH,
Lieutenant Colonel,
Medical Corps, N. A.

TREASURY DEPARTMENT
UNITED STATES PUBLIC HEALTH SERVICE
Washington, April 5, 1918.

To the Editor: In view of the reports in current medical literature of untoward results from the use of arsphenamine and neoarsphenamine, I have to request that you give publicity to the statement that it is requested that samples of any lots of these arsenicals which have shown undue toxicity be forwarded to the Hygienic Laboratory for examination.

In sending these samples it should be ascertained that the lot number is the same as that of the ampoules used on patients. The samples sent should, if possible, be accompanied by a brief age of the patient, the dose and dilution of the drug given, the symptoms and results; that is, drug given, the symptoms and results; that is, whether fatal or not. Respectfully,

G. W. MCCOY,
Director.

Public Health

THE POLIOMYELITIS OUTLOOK.

Prognosis in epidemiology ought to be cultivated as it is in the individual case of sickness.

The summer of 1917 found us mentally unprepared for the seemingly sudden onslaught of poliomyelitis. Indeed, it had been rather confidently announced by health authorities that we probably would not have an outbreak; but by December 31 more cases had been reported than during the much published epidemic of 1916. The death rate for the state was 27 per cent. instead of less than 13 per cent. as in 1916.

The following considerations are thought worth offering in the way of a basis for epidemic prognosis as to poliomyelitis.

From January 1 to April 1, 1916, there had been 26 cases reported.

From the same period of 1917 the figures were as follows: Cases, 24; deaths, 4; death rate, 16.6 per cent.

The present year the figures are: Cases, 41; deaths, 9; death rate, 22 per cent.

No doubt some allowance must be made for better reporting since July 1, 1916, but not so much as would seem, as this disease has appeared in grouped cases to so great an extent in late years that its presence over the portions of the state where reports of communicable diseases are on a fairly satisfactory basis has been quite well reported. Furthermore, in a rather wide survey of the state not many unreported cases are found dating to the early part of 1916.

The figures quoted above are believed to be accurate—sufficiently so to reveal that we have a virulent type of the disease endemic in the state as evidenced by its continued and wide prevalence, its extra-seasonal outbreaks and its high death rate. To these factors may be added its probably increasing tendency to leap out of the accustomed decade periods of its incidence, i. e., the tendency to not only a lessened incidence among children under ten years of age, but also an increased incidence among persons above this age.

It is scarcely fanciful to call attention also to a seemingly cyclical feature in poliomyelitis epidemiology.

As judged by the epidemic in the eastern states there seems to be a period of years when sporadic cases occur. Then a series of years begins when epidemic proportions seem to be reached. Ending this period a climax is apparently reached in which the case rate and probably all other epidemic features are very high, after which the disease drops back to the sporadic type.

It is a conjecture of considerable probability that Illinois is now somewhere in the first one-half of the cyclical period of this epidemic.

It certainly is within the bounds of wisdom to orient ourselves in relation to acute poliomyelitis. It should not be looked upon as alarmist propaganda to call attention to the consideration herein contained. We are quite as much in danger of the ostrich habit as we are of being stampeded. We may be dealing with a condition and not a theory.

In other words, poliomyelitis of severe type is among us and it is not unreasonable to expect its continuance and increase during its favored seasons for some years to come.

"COUNTER PRESCRIBING" CONSTRUED AS PRACTICE OF MEDICINE.

In the war-time program for the prevention and suppression of venereal diseases in which the federal and state governments are now taking an active part in Illinois, considerable difficulty has been encountered through the common practice of counter prescribing on the part of a large number of pharmacists. The rules and regulations for the control of venereal disease recently promulgated by the State Department of Public Health require that the druggist as well as the physician shall report all cases of venereal disease coming to his notice or attention, but it has been recognized by the better class of pharmacists that the purposes of the federal and state governments will be much more thoroughly attained if counter-prescribing for venereal disease is abolished altogether, and as a result a considerable percentage of the pharmaceutical profession have discontinued this practice. The tremendous importance of venereal disease during war time and the fact that all druggists have not adopted a policy in harmony with the state and federal program has rendered it advisable to secure more definite legal opinion in regard to counter-prescribing for venereal diseases to be used has a basis of legal action in case such steps may be deemed necessary.

At the instance of both federal and state authorities, Attorney-General Edward J. Brundage has recently submitted an opinion to Dr. C. St. Clair Drake, director of the State Department of Public Health, which is exceedingly interesting and important in character.

While taking cognizance of the fact that the act to regulate the practice of pharmacy authorizes the druggist "to compound, recommend, dispense, or sell drugs, medicine, etc.," the Attorney-General does not construe this right of the druggist to "recommend" to authorize him to compound drugs or medicine at his own discretion for the cure or treatment of a specific disease and he further holds that such an act constitutes the practice of medicine.

"To construe the word 'recommend' as used in the statute to mean that a druggist may, under the conditions set forth, prescribe medicine for the cure of a disease," says the opinion, "will defeat the object and purpose of the statutes.

"Such a holding would have to be based upon the assumption that a druggist possesses the same skill and knowledge as a physician to determine a remedy and prescribe its application."

Further the opinion says, "Reading the entire act together and having in mind the objects and purpose of the act, it seems clear that if a so-called recommendation of a druggist, who is an unlicensed physician, has all the necessary elements which constitute the practice of medicine, as that term is defined by our courts, then such druggist must be regarded as practicing medicine within the meaning of the statute and he may be punished pursuant to the provisions of paragraph 171, chapter 91."

The Attorney-General cites a large number of decisions of the Illinois Supreme Court with the following conclusion:

"The rule deducible from these decisions seems to be that if any person who is an unlicensed physician, even though he may be a druggist, determines the proper remedy for a disease and gives or prescribes a medicine therefor, other than a patent or proprietary preparation in original and unbroken packages, he will be regarded as practicing medicine within the meaning of the statute of this state." The application of this opinion will go far, not only toward the control of venereal diseases, but toward the abatement of the pernicious practice of counter-prescribing which has been a bone of contention in Illinois for many years.

INCREASING REGISTRATION OF VITAL STATISTICS.

While the law for the registration of births and deaths, enacted by the forty-ninth general assembly,

affords the machinery for placing Illinois in the registration area as recognized by the United States Bureau of the Census, that recognition has not yet been accorded to the state and will not until it has demonstrated to the federal government that the reports of vital statistics are relatively complete. The machinery for securing reports of births and deaths has been enormous since it has been necessary to establish approximately 2,000 local registrars equipped with all materials for the proper performance of their functions. All of these agencies are now in operation and the Division of Vital Statistics of the State Department of Health is bending every effort toward obtaining "100 per cent. registration of births and deaths in Illinois."

In some of the more remote counties this will be exceedingly difficult of obtainment, so far as deaths are concerned, on account of the fact that undertakers are not ordinarily employed, the law imposing a large part of the responsibility for registration upon the undertaker.

More complete reports of births will be brought about through the co-operation of the Child Welfare Department of the Woman's Committee of the Council of National Defense, which will utilize the thousands of women of the various localities registered for war service in bringing about complete birth registration in their communities.

The State Department of Health is looking to physicians and undertakers throughout the state to give united support in an effort to rescue Illinois from the unenviable position of a non-registration state which it has held in times past.

DEVELOPMENT OF CHILD WELFARE WORK.

The State Department of Public Health has undertaken an interesting and important war-time program in the field of child welfare, utilizing as co-operating agencies the services of the Child Welfare Department of the Women's Council of National Defense and the Illinois Tuberculosis Association.

The program which is now being placed in operation contemplates complete registration of births and deaths, the employment of a community nurse in each county in the state, the establishment of open-air schools and open-window rooms, the employment of school nurses and medical school inspectors, the development of child welfare activities in every community with infant welfare stations and children's clinics, and the preparation of portable exhibits on child welfare to be sent to all parts of the state.

The program also includes the support of the clinics for the after care of victims of poliomyelitis which have been successfully conducted by the State Department of Public Health for sometime past and the local representatives of the Woman's Council of National Defense are now interesting themselves in the collection of "brace funds" to supply such appliances as may be required by the victims of infantile paralysis.

Notwithstanding the co-operation of very many physicians, it still seems desirable to announce to the medical profession of the state the successful operation of these clinics. Extensive, as well as unsought, newspaper notice of the work has been given, which has been gratifying to those in charge.

As pieces of social machinery the organizations for the after care of infantile paralysis victims are interesting. They are informal, but effective. The state furnished a clinician and a nurse. At Springfield, St. John's Hospital furnishes the hospital facilities and the untiring services of the Sisters. The Springfield Tuberculosis Association furnishes a field nurse for most efficient follow-up work in muscle re-education. The county supervisors of Sangamon are allowing $100 per month for the brace fund for patients within the county.

In Cook county the Division of Rural Nursing of the Social Service Department is giving whole-hearted service in support of the three clinics at Chicago Heights, Blue Island and Oak Park. The clinical centers in Cook county are St. James Hospital; Chicago Heights, St. Frances Hospital; Blue Island and West Side Health Center, Oak Park.

At Joliet the Silver Cross Hospital entertains the clinic. Ryburn Memorial Hospital, the Community Nursing Association and the Women's Committee of the Council of Defense are co-operating at Ottawa. At Rock Island the West End Settlement, and at Moline the King's Daughters are furthering every interest of the work. At each clinic nurses in attendance receive instruction in muscle training and the parents are being taught to care for their children.

GENERAL AND SPECIAL HEALTH SURVEYS.

With the sanitary survey of the City of Freeport completed, and the report of the more extensive survey of the sanitary zone about Camp Grant and the City of Rockford in process of final revision, the Department of Surveys and Rural Hygiene of the State Department of Health is now engaged in sanitary and health features of the survey of Waukegan and North Chicago. In addition to the interest which attaches to this survey on account of the industrial activities of these two communities, the investigations will be important on account of the close proximity of the Great Lakes Training Station which now houses approximately 28,000 young men and whose capacity is rapidly being raised to 50,000.

The Division of Surveys and Rural Hygiene is also assisting in the tuberculosis survey of Champaign county, which is being carried out by the county tuberculosis sanitarium board and is preparing to take part in a tuberculosis survey of Morgan county.

HEALTH NOTES.

On account of a shortage in the forces of the central diagnostic laboratory at Springfield, due to the number of men who have enlisted in military service, Wassermann tests will be made only on Saturday and Sunday for the time being.

Through a change in the rules and regulations of

the State Department of Health, the period of quarantine for German measles has been reduced from fourteen to eight days.

Society Proceedings

COOK COUNTY

Chicago Medical Society, Regular Meeting, March 6, 1918

MEDICAL PROBLEMS CONNECTED WITH THE DRAFT

1. From the Standpoint of the Ophthalmologist, Major Wm. H. Wilder, Camp Taylor, Ky.
2. From the Standpoint of the Appeal Board, M. L. Harris.
3. From the Standpoint of the Internist, Major Ernest E. Irons, Base Hospital, Camp Custer, Mich.
4. The Soldier's Foot, Major John Ridlon.
5. Nervous and Mental Conditions in an Army Camp, Ralph C. Hamill.

Regular Meeting, March 13, 1918

1. Posture in the Treatment of Lobar Pneumonia, Ed. L. Heintz.

Discussion, Chas. Davison and Frederick Tice.

BIOLOGY OF TWINS

2. (A) Identical Twins, Prof. H. H. Newman, University of Chicago.

(B) Sex Relations of Non-Identical Twins, Prof. Frank R. Lillie, University of Chicago.

Regular Meeting, March 20, 1918

JOINT MEETING OF THE CHICAGO UROLOGICAL SOCIETY AND THE CHICAGO MEDICAL SOCIETY

SYMPOSIUM ON KIDNEY SURGERY

1. Indications in Various Phases of Renal Surgery, Gustav Kolischer.
2. Tuberculosis of the Kidney, D. N. Eisendrath.
3. Surgery of Renal Lithiasis, with lantern slides, Herman L. Kretschmer.

Regular Meeting, March 27, 1918

1. Cancer of the Breast and Its Treatment with Observations on the Use of X-Ray, Ed. H. Ochsner.
2. Traumatic Lesion of the Roots of the Lumbosacral Plexus with Report of a Case. Illustrated by Charts, Sigmund Krumholz.
3. The Major Plastics of the Abdominal Wall, Weller Van Hook.

Regular Meeting, April 3, 1918

1. Pathology and Treatment of Seminal Vesiculitis and Acute Epididymitis, Charles M. McKenna.
2. Some Special Features in Connection with Fractures of the Os Calcis, Frank E. Pierce.
3. The Surgery of Winged Scapula, Benj. F. Davis.

GREENE COUNTY

The regular meeting of the Greene County Medical Society was held in Carrollton, Illinois, Friday, February 8, 1918.

On arrival at Carrollton the physicians of the society were served with an excellent dinner.

The society was called to order by President Hensler at 2:30 p. m. The minutes of the annual meeting were read and approved.

A report was given by Dr. Edwards, representing the committee for the elimination of one telephone system, in which he briefly stated that as yet the committee had accomplished nothing definite, but that they were still working toward the elimination of one system.

A discussion followed regarding the making of life insurance examinations for any fee less than the usual $5 fee. It was the concensus of opinion that no member of this society should examine for $3 per examination or take the examinership for the Prudential or any other Life Insurance Company unless said company was willing to pay the same fee as is customary for such old line examinations, regardless of the amount of the policy, and further, that any physicians making such examinations for a fee of $3, or any amount less than the ordinary fee, were commiting a breach of Medical Ethics and breaking faith with their fellow practitioners.

The following papers were read and discussed:

Pertussis, Dr. O. L. Edwards, Roodhouse.

Septic Wounds, with special reference to Treatment, Dr. L. J. Hensler, Carrollton.

The censors reported Roodhouse as the next place of meeting, April 12, 1918.

Twelve members and one visitor were present.

L. O. FRECH, Secretary.

UNION COUNTY

Meeting was called to order by President L. D. Keith, at Anna, Ill., March 28, with eleven members and eleven visitors present.

Dr. C. H. Diehl was elected to membership by transfer from Franklin County Society.

The following program was then given. The subject being, "Pneumonia." Etiology, paper by L. J. May, read by E. V. Hale; Pathology, by E. W. Zook; Symptomatology, D. W. Grear; Diagnosis, A. J. Lyerly; Prognosis, S. C. Martin; Treatment, T. L. Granay. Discussion led by W. E. Lingle.

All the papers were good and brought out quite a lengthy discussion by nearly all the profession present.

E. V. HALE, M. D., Secretary.

CHICAGO OPHTHALMALOGICAL SOCIETY MEETING OF NOV. 19, 1917—Continued

OCULAR MANIFESTATIONS

OCULAR MANIFESTATIONS

A study of the limited number of cases coming under the author's observation has indicated that the majority are accommodative disturbances, while some appear to be truly refractive.

But whether accommodative or refractive, the ciliary muscle acts and reacts as the result of some stimulus applied outside the eye itself. In the normal individual this stimulus originates in

the brain, and manifests itself in perfect vision through a crystalline lens of proper curvature, made so by the action of the ciliary muscle. In the nonaccommodative eye, on the other hand, this stimulus must arise outside the domain of the will, resulting in imperfect vision through a lens of improper curvature, made so by the action of the ciliary muscle.

Muscular movements may be classified as follows: voluntary, involuntary and reflex.

Voluntary muscular action is under the control of the will. Involuntary muscular action is under the control of the sympathetic nervous system. Reflex muscular action is brought about by the impulse produced by a stimulus applied to a sensory periphery, traveling through a ganglion, where it is switched onto the motor nerve supplying the muscle. The course over which this reflex impulse travels is called a reflex arc.

Without going into a minute review of the trigeminous nerve, its roots, its three main branches and its numerous endings, the author pointed out the components of the reflex nerve tract reaching the ciliary muscle.

Following back the numerous motor nerve filaments that supply the muscle, the ciliary ganglion is reached, situated behind the eye and within the orbit. This is made up of three roots, each carrying its own kind of nerve impulse; a motor from the motor oculi, a sympathetic from the cavernous plexus, and a sensory from the opthalmic division of the trigeminous, together with a root communication with the spleno-palatine ganglion, capable of carrying reflex impulses.

The motor oculi supplies all the extrinsic muscles of the eye except the superior oblique and the external rectus, while the ciliary ganglion supplies the intrinsic, namely, the ciliary and the orbicularis iris.

The spheno-palatine ganglion is made up of three roots; a motor from the fascial, which unites with a sympathetic root from the carotid plexus to form the vidian, and a sensory from the maxillary division of the trigeminous. This ganglion is also connected directly with the optic ganglion by a root communication, besides the communication with ciliary ganglion, referred to.

The spheno-palatine ganglion receives sensation from all parts of the interior of the nose except a small area on the lateral and septal walls anteriorly.

A line of nerve communication, then, is established between the nasal cavities and the ciliary muscle, forming a reflex arc, having as its components the sensory filaments in the nose, the spheno-palatine ganglion, the interganglionic line from the spheno-palatine to the ciliary, the ciliary ganglion, and lastly the motor nerve filaments to the muscle.

Having this reflex arc, is it not fair to assume that reflex impulses may reach the intraocular muscles and influence them in the disturbance of vision? May it not be possible, or even probable, that irregular contraction of the ciliary muscle may result in distortion of the lens, and in the production of lenticular astigmatism? In fact, may not any erratic action on the part of the ciliary muscle be attributed to some irritating cause outside the eye? If such be the case, it behooves us as ophthalmologists to institute a thorough search for the source of irritation wherever it may be.

The question of peripheral localization has not as yet received the attention that it deserves; but if the reflex hypothesis is correct, the source of irritation ought to be found in some area whose sensory filaments center in some ganglion, where some of these filaments arborize around motor cells whose axis cylinders reach the disturbed muscle. As no sensory nerve filaments from the eye pass into the ciliary ganglion to make up a reflex arc, the irritating cause would hardly be looked for in the eye.

The ganglion next in course is the spheno-palatine, whose sensory distribution is the mucosa of the turbinates and meatuses on the lateral walls of the nasal cavities, and that of a corresponding area on the septum. It goes without saying that these regions should be examined with minute care for any irregularity that may be the cause of the disturbance.

In those cases coming under the author's observation, these intranasal areas have been the seat of by far the greater number of irritative conditions producing these varying ocular symptoms, and when found and properly removed, glasses then adjusted to the eye conditions present remain indefinitely satisfactory. The author is convinced, therefore, that these eye manifestations should be regarded as symptoms pointing toward the underlying cause.

DISCUSSION.

Dr. Frank Brawley cited a case in connection with Dr. Andrews' paper, although it did not follow the reflex arc through the spheno-palatine ganglion. Many examinations of the eye had been made and many different pairs of glasses had been ordered, and when he saw the case he was not able to find the refraction essentially different from the number of pairs of glasses which the patient had formerly tried. In making the nasal examination x-ray pictures were made of the sinuses which were found negative, but accidentally an impacted wisdom tooth was found and when all teeth were filmed there was an impacted wisdom tooth in each lower jaw. When these were removed there was no furthr need for glasses or any eye treatment.

Dr. E. V. L. Brown asked Dr. Andrews if he had seen any cases of genuine spasm of accommodation that could be attributed to such irritation through the nose; vision had been previously established to be normal, and then suddenly the patient developed apparently a myopia of from one-half to two or three D., which would be promptly corrected with a minus one or minus two glass, as the case may be; then under atropin the spasm could be relieved, but after the atropin had been stopped the spasm would return. Is there any definite relation between these cases and accessory sinus disease? Dr. Brown had seen five such cases in the past year, but had not been able to find any cause for them.

Dr. Oliver Tydings cited a case that came under his observation years ago. A piano manufacturer came to him with an ulcer of the cornea. Examination showed that a canaliculus

on the same side as the ulcer of the cornea had been split up while in a hospital in Copenhagen, where he spent three months fifteen years before, and there was the scar of an old ulcer of the cornea of that attack. Patient had been under the care of another oculist for some weeks without any improvement. In making an examination for other possible sources of trouble the middle turbinal on that side was found very much hypertrophied. He advised the patient, if the eye did not improve to have the middle turbinal removed as that was undoubtedly the source of the trouble. After a few days and no improvement taking place, the eye becoming progressively worse, the middle turbinal was removed. In twenty-four hours there was a marked improvement and ulcer healed in a week.

Dr. Andrews:, in replying to Dr. Brown, said he had not had a case of spasm of accommodation that could be overcome under the influence of cycloplegics.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

The regular monthly meeting of the Chicago Laryngological and Otological Society was held in the South Dining Room of the Palmer House, on Tuesday evening, November 20, 1917, at 7:45.

As the President, Dr. Friedberg, was out of the city the meeting was called to order by Dr. Loewy.

PRESENTATION OF CASES AND INSTRUMENTS

Dr. Joseph Beck presented a patient with a dentigerous cyst. The patient was a little boy who had a unilateral swelling of the right side of the face which was hard to palpation and which had been present for about ten months. There was associated with it a very foul odor from the mouth. It was not painful. On palpation directly over the swelling in the mouth there was at one point in indentation which when pressed in came right back. It felt like pasteboard, did not give a crackling sound, but responded to pressure. That was the cardinal sympton of dentigerous cyst, which was the diagnosis. The diagnosis was proved by x-ray pictures taken both in films and in postero-anterior exposure. The teeth in the cyst were merely formed and unable to erupt. They appeared to be the incisors and premolars. Puncture of such a cyst usually revealed fluid of a gelatinous nature. Dr. Beck showed pictures of other dentigerous cysts.

Dr. Harry L. Pollock showed a young man whom he had seen for the first time on the previous morning. He complained of a swelling over the right antral region which had been present for about a month. During this time he noticed that the right side of the nose was not as free as the other. There was no pain but when he bit on that side he could feel the teeth give a little. A very soft tumor which was crepitant, could be felt over the antrum. A dentigerous cyst was suspected and the x-ray emaxination proved that diagnosis correct.

Dr. Robert Sonnenschein demonstrated a small vibratory mechanism which could be used as a noise apparatus in testing for unilateral deafness. It was operated by a small, dry cell battery which retailed for about thirty-five cents. The appliance was made by Sharp & Smith and sold for $5.00. The other noise apparatuses previously used were the Neuman, which was very expensive, and the Baraby, which was now practically unobtainable on account of the war and it had cost a considerable sum.

The disadvantage of this instrument was the fact that a good deal of outside noise was being produced, but efforts were being made to overcome this defect. In testing patients, however, with the apparatus in one ear it was found that despite this noise they were able to hear even the whispered voice in the other ear.

The advantages of the appliances were its cheapness, its portability and ease of manipulation. At least during the war it might help out in the absence of the Barany apparatus.

DISCUSSION.

Dr. Loewy was of the opinion that with two such apparatuses and a switch they could be used as a malingering test, just as was done with a noise apparatus.

Dr. Ira Frank presented a paper entitled "Dentigerous Cysts with Report of Case; X-ray Plates."

The theory of dental cysts is largely that proposed by Malessez. He held that cystic odontomas arise from a small irregular cell mass about the roots of the teeth, termed by him "debris epitheliaux paradentaires." According to New, two classes of cysts are found; namely (1) simple cysts, that is, dental or root cyst; and (2) dentigerous cysts which include enamel odontomas and the malignant multilocular cystic tumors.

The dentigerous or tooth bearing cysts occur less commonly that the simple dental cysts and are usually located in the bicuspid or molar region in either jaw. While they form usually during or shortly after second dentition they may occur later in life. The cyst wall is composed from within outward of thin flattened epithelial cells and a layer of connective tissue and bone, the latter varying in thickness according to the size of the cysts. The teeth which are missing from the jaw are found within the cyst cavity imbedded quite loosely in the substance of the wall.

History of the case what that of a boy about 12 years of age. When six years old a swelling in upper jaw just beneath nasolabial fold on left side was noticed. The lateral incisor, cuspid, and bicuspid teeth on the same side were missing and had never erupted. A roentgenogram showed the three teeth in the cyst. At the time of operation the growth filled the cavity of the antrum of Highmore. It was enucleated by an incision on buccal surfaces of the superior maxilla, with uneventful recovery of the patient.

Pathological report showed a cyst 3 by 3 by 2 cm. in size, with whitish smooth wall, containing three small but well formed teeth. The inner surface of the cyst was lined by a layer of squamous epithelium; scattered throughout the dense tissue of the outer half of the wall were moderate numbers of lymphocytes. Diagnosis: Dentigerous cyst with some acute and subacute inflammation.

DISCUSSION.

Dr. Joseph Beck regretted that Dr. Frank had not spoken more at length regarding treatment. The treatment was interesting because recurrences were frequent. Before he adopted his present method of treatment he had nothing but recurrences. Scraping the teeth out with a curet was followed by healing only to have the growth return. A small vestige of the pithelium would remain in some part of the cyst and a recurrence would take place. The treatment which had given him absolutely perfect results was as follows: In opening the cyst the cavity was thoroughly scraped with a curet, the whole lateral and anterior wall was removed with froceps and then the burr was used to remove the surface of the bone so that there were no remains of the epithelium. Then the cavity was filled with a mixture of spermaceti, wax and iodine—33 per cent. spermaceti, 66 per cent. paraffine, and enough iodine—about ½ of 1 per cent. was the mixture which was used originally by Moroff, in healing cavities of the leg. This was packed in tight in the cavity and the mucous membrane of the lip side was wired to the surface above the teeth. The wax was allowed to remain in and it could be seen to be extruded until the cavity was filled up. There had never been any recurrence since adopting that treatment. In the case of the boy he exhibited he expected to adopt another method, which he thought would be even more satisfactory. This was based upon some experiments he was making with a mixture of ground up cartilage, wax and iodoform. The costal cartilage contained a substance which was eminently satisfactory for filling out a cavity,—more so that the inert substances.

One of the most interesting cases he had had was that of a lady who had a dentigerous cyst which was drained and washed and recurred for two or three years. X-ray examination showed a tooth high up in the antrum. At the time of operation he had great difficulty in getting the tooth loose, as it was very firmly imbedded. He took a chisel and pried it out and the tooth disappeared; it could not be found anywhere. He thought it might have been swallowed, but what she complained of was that her nose had become blocked. The following day she could not breathe through the side of the nose which she was operated on. On the third day an examination was made, some adrenlain being introduced, and there was the tooth in the inferior meatus. The interesting part was that between the nose and the cyst was the antrum; he had opened the antrum and while there was little blood in the antrum the tooth was not there, but had gone through the antrum into the nose.

In another case there was a cyst of the inferior maxilla. The patient was a little girl and there was a tumor on the side of the face which was an adenomatous affair. That cyst was treated in a similar manner with perfect recovery. Usually there is great danger of weakening the jaw, as the cyst absorbed the bone and spontaneous fractures had resulted as a consequence. As a rule, more teeth were distorted in a cyst which was high up and the teeth were usually not teeth but remnants of teeth.

Dr. Otto T. Freer described a dental cyst which he had removed from a young woman. The cyst had caused absorption of the right premaxillary bone and lay above the right insisor and cuspid teeth of the upper jaw, uplifting the right half of the upper lip and right ala nasi. It protruded into the nasal cavity along the anterior one-fourth of the nasal floor having taken the place of the absorbed bone. The absorption of the right premaxillary bone had deprived the cartilaginous septum of support so that it curled into the right naris, so that the anterior-inferior border of the cartilage of the septum had to be resected to free the right nostril.

Dr. H. L. Pollock stated that all the teeth he had seen had no fangs but simply a crown of the tooth. In pictures they appeared as if imbedded in the orbit, but taken stereoscopically this was shown not to be the case. In one patient, a boy of eighteen, the third molar had not erupted, so it might be taken for granted that it was an interrupted molar on that side. The case was to be operated in the same way Dr. Beck had described and he thought there would be no recurrence if the burr was used so as to be sure to remove all mucous membrane.

Dr. Paul Marquis was very glad Dr. Beck brought out the point about the burr. His experience had agreed entirely with that of Dr. Beck's as regarded recurrences and in the future he would certainly use this method. He thought the cases really were divided into two groups from the anatomical situation; those which lie anterior to the first bicuspid and those which are posterior.

Personals

Dr. Guy A. Sloan, Bloomington, has been elected county physician.

Dr. E. K. Armstrong, Chicago, has been called to France for Red Cross service.

Dr. Frank W. Young, Chicago, has been commissioned first lieutenant M. R. C.

Dr. W. W. Coleman, M. R. C., of Lincoln, has been ordered to Fort Oglethorpe, Ga.

Dr. Chas. C. Renfro, Chicago, M. R. C., has been ordered to Fort Oglethorpe, Ga.

Dr. A. B. Zwaska, of Rockton, has been commissioned first lieutenant, M. R. C.

Dr. Max L. Mendel, Chicago, has been commissioned Captain, M. R. C., recently.

Maj. J. C. Dellenbach, M. R. C., of Champaign, was stationed at Fort Sheridan, recently.

Dr. Athur Sprenger, of Peoria, is first lieutenant in Kings county, N. Y., hospital unit No. 37.

Dr. H. S. Bennett, Moline, has been appointed surgeon to the Milwaukee and D. R. I. and N. W. Railroads.

Dr. George H. Chapman, Chicago, an examiner of selected men, was approached with a bribe and promptly turned the would be slacker over to the police.

Dr. Philip Rosenblum, Chicago, has been commissioned second lieutenant and ordered to Camp MacArthur, Waco, Tex.

Dr. Robert A. Allen, for six years medical director of the Westside Y. M. C. A., left March 6th for similar work in France.

Major Robert J. Gay has been promoted from the command of Field Hospital No. 131 to the directorship of ambulance trains.

Dr. B. E. LeMaster, of Bushnell, reports that he is still busy with eleven assistants in the base hospital at Roman, Roumania.

Lieut. Thomas Grant Allen, Chicago, has been

appointed chief of the medical service of Corpus Christi convalescent base hospital.

Dr. H. L. Corbus, of Kankakee, has been appointed to the medical staff of the Pennsylvania state hospital for the insane, at Harrisburg.

Drs. R. B. Cobb, A. E. Halstead, W. H. Allport, Casey Wood and Chas. M. Robertson, of Chicago, have been called into service recently.

Dr. Josephine Milligan, Jacksonville, has been called for service in France through the Rockefeller Foundation, and will work directly under the French government.

Major Patrick J. H. Farrell, survey officer and pathologist of the base hospital at Camp Tarvis, Texas, is now convalescing from pneumonia contracted in camp.

Dr. Frederick A. Besley, major and director of Base Hospital No. 12, in France, has recently been detached from that unit and is now consulting surgeon in the field.

Major Daniel W. Rogers, surgeon of the One Hundred and Thirty-Fourth Illinois Field Artillery, has been relieved from command of ambulance trains and placed in charge of Field Hospital No. 131.

A meeting of the medical women of Illinois was held March 26th, to raise funds for a women's hospital unit to go to Europe under the auspices of the Red Cross. Three hundred thousand dollars are needed for the purpose.

The following seven Chicagoans were commissioned first lieutenants in the medical corps March 11: Drs. Clifford S. Powell, Francis T. Rollins, David B. Rotman, Richard Torpin, Eugene Westernhagen, and Ingebrecht Jerdee.

Dr. Harry D. Orr, who has been director of ambulance trains at Camp Logan, Houston, Texas, has been promoted to the rank of lieutenant-colonel, M. C., N. A., and placed in command of the One Hundred and Eighth Sanitary Train.

In recognition of his excellent work as head of Camp Grant base hospital, Major H. C. Michie, Jr., has been promoted lieutenant colonel in the regular army. It is reported that over 60,000 soldiers have passed through Camp Grant, and of the 5,020 patients treated only 38 deaths occurred.

Lieut. John G. Dwyer, who was recently ordered dismissed from the Army at Camp Funston, following a court martial, has asked for a rehearing. Lieutenant Dwyer was a practitioner at Cullom. He states that the charges against him were made by Captain Whistler, who afterward robbed the bank at the camp of $62,000, killed four men with an ax, and then took his own life.

Seventeen appointments of physicians to the medical advisory boards engaged in draft work in Chicago were announced March 18th by Maj. John M. Dodson, medical advisor to the governor over the boards in Illinois. They are:

At Wesley hospital—Dr. John D. Kales.

At the Provident hospital—Dr. J. W. McDowell.

At the West Suburban hospital—Dr. R. Von Der Heydt.

At Englewood hospital—Drs. S. L. Friduss and James Graybeal.

At St. Joseph's hospital—Dr. A. M. Hall, oculist, and Dr. Ethan A. Gray.

At St. Luke's hospital—Drs. Harold E. Jones, James T. Campbell, and F. W. Merrifield.

At the Presbyterian hospital—Drs. D. B. Hayden, Edwin McGinnis, and Robert H. Herbst.

At Michael Reese hospital—Drs. Julius H. Hess, L. E. Schmidt, Frank Lydston, and Morris Braude.

News Notes

—A fire last month destroyed the offices of six physicians in Canton.

—Drs. Arthur L. Blunt and Isaac W. Hodgens were denied their petition for a writ of certiorari by Judge Torrison in the matter of revocation of license to practice medicine.

—The Scott County Medical Society at the March meeting in Davenport, Iowa, asked the military authoritites to grant the society the privilege of conducting a war on venereal diseases there.

—The editor of a Waukegan paper moralizes on the raise in rates for medical services recently put in effect by physicians there. He seems to fear that the people will deprive themselves of medical attendance with disastrous effects.

—A special car costing $16,000 with stretcher

capacity for six patients and seating room for thirty-two persons, has been provided and will be operated between the various psychopathic institutions of the state in transferring inmates.

—Dr. Taylor, state supervisor of military zones, after a tour of inspection of Scott Field and other camps, has reported that East St. Louis must be cleaned up to make conditions safe for the camp at Belleville.

—Mrs. Neva A. Brown, widow of Henry B. Brown, president and chief owner of Valparaiso University, has brought suit in the U. S. district court to recover ownership of the Chicago College of Medicine and Surgery.

—The Peoria County Tuberculosis Sanatorium has been closed on account of the prevalence of insanitary conditions. A consultation was held between local officials and the director of the state department of health, March 13, regarding the sanatorium.

—It is reported that the state epileptic colony at Dixon will be open for a limited number of male patients about May 1. Upon completion it will accommodate 2,000 patients. Dr. H. B. Carriel, of Jacksonville, will be the first superintendent.

—Dr. A. J. Markley, treasurer of the Illinois State Medical Society and president of the Boone County Medical Society, appeared before the board of supervisors with others interested in the provision of funds under the state law for the care of tuberculous patients.

—The McLean County Medical Society met February 12, at Bloomington. Dr. J. K. P. Hawks read a paper on "Some Observations on Goiter." At the March 12 meeting, Dr. J. Whitefield Smith gave an address on "The Range of the Physiological Life of the Tonsil."

—The state civil service commission has announced the appointment of the following medical examiners, Dr. John W. Hutton, Newton; Dr. Omar A. Kell, Salem; Dr. Frank B. Hiller, Pinkneyville; Dr. W. Brown Baird, Mount Carmel, and Dr. Ross L. Moter, Albion.

—The Chicago Medical Society has formed a grievance committee to protect the profession from medical quacks, violators of the medical and other laws, and to investigate disreputable persons in the city. The committee is composed of Dr. Fred L. Glenn, George L. Apfelbach and Otto T. Freer.

—After an investigation of the epidemic of intestinal trouble at Peoria in which 3,000 persons were afflicted, the state analyst, who examined the water, said that it had been badly contaminated and might have been the cause of the trouble. The water at present, while not pure, is in much better condition.

—At the meeting of the Robert Koch Society for the Study of Tuberculosis at the City Club in Chicago, March 28, Dr. Everett Morris, Oak Forest, gave the results of induced pneumothorax in 202 cases of tuberculosis, and Dr. Burton H. Rogers read a paper with lantern demonstration of the subject of "The Barnyard as a Disseminator of Tuberculosis."

—Plans for the joint supervision of sanitary conditions in Illinois training camps by state and federal authorities have been formulated by the office of Dr. C. St. Clair Drake, state director of health. It has been recommended to enlarge the military camp at Scott Field, Belleville, to include East St. Louis. The other six military zones in Illinois are Fort Sheridan; Great Lakes; East Peoria, which includes Peoria; Chanute Field, Rantoul; Rock Island and Moline, and Camp Grant, Rockford. Medical directors will be appointed to oversee the work of sanitation in these military zones.

—The last of Chicago's four Red Cross base hospital units, No. 14, under Major Lewis L. McArthur, left April 3 for Camp Custer for a period of training before going overseas.

Major Philip Schuyler Doane and Major N. M. Percy led the members of unit No. 11 to Camp Dodge, April 2nd.

Unit No. 13, directed by Major Dean D. Lewis, left for an eastern port March 29th.

Unit No. 12 has been in France since last May.

These units have been outfitted and equipped at an expense of about $75,000 each. Each has a membership of 200 enlisted men, 35 doctors, 100 nurses and 6 civilians.

Marriages

Lieut. Carl Herman Bartling, M. R. C., U. S. Army, Chicago, to Miss Katherine Stewart of York, N. Y., March 23.

MATILDA OLSEN ENNIS, M. D., late of Chicago, to Mr. George A. Cowden of El Centro, Cal., at San Diego, Cal., January 1.

LIEUT. IMAS PRYOR RICE, M. R. C., U. S. Army, on duty at Camp Grant, Rockford, Ill., to Miss Emma Edlund, both of Chicago, February 3rd.

LIEUT. LESTER JOERG PALMER, M. R. C., U. S. Army, Chicago, on duty at Camp Grant, Rockford, Ill., to Miss Mercedes Blackledge of Caney, Kan., at Rockford, February 3.

LIEUT. BENJAMIN WALTER PROVOST, M. C., U. S. Army Peru, Ill., on duty in Washington, D. C., to Miss Katherine Bell Conway of Peru, Ill., in Springfield, Mass., February 12.

Deaths

WILLIAM HENRY, M. D., Harmon, Ill.; Rush Medical College, 1870; aged 78; died at his home, January 9, from cerebral hemorrhage.

LANCASTER F. SCOTT, M. D., Chicago; Bellevue Hospital Medical College, 1882; aged 67; died at his home, March 4, from gastric ulcer.

A. A. SHOBE, M. D., Jerseyville, Ill.; Missouri Medical College, St. Louis, 1869; aged 69; died at his home, December 5, from cirrhosis of the liver.

WENZEL MAJESKI, M. D., Chicago; Bennett Medical College, Chicago, 1881; aged 73, died in the Alexian Brothers' Hospital, Chicago, February 1.

FREDERICK ROESCH, M. D., Chicago; University of Heidelberg, Germany, 1852; aged 88; died at the home of his daughter, March 21, from senile debility.

ARTHUR RUBEL KEITH, M. D., Rockford, Ill.; University of Pennsylvania, Philadelphia, 1907; aged 35; died at Utica, N. Y., February 21, from pulmonary tuberculosis.

BENJAMIN FRANKLIN HAMILTON, M. D., Roseville, Ill.; Medical College of Ohio, Cincinnati, 1867; aged 79; died in the Burlington Hospital, December 18, from senile debility.

RALPH E. MOESER, M. D., Montrose, Ill.; Hahnemann Medical College, Kansas City Mo., 1910; aged 33; a member of the Illinois State Medical Society; died from injuries in an automobile accident, March 8.

JOSEPH E. LOWERY, M. D., Homer, Ill.; Drake University, Des Moines, Iowa, 1885; aged 56; formerly a Fellow of the American Medical Association; died at his home, November 18, from cerebral hemorrhage.

SILAS H. VAN DOREN, M. D., Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1878; aged 66; for many years a practitioner of Elgin, Ill.; died at his home, February 8, from cerebral hemorrhage.

WILLIAM ALLAN MACFARLANE, M. D., Chicago; University of Illinois, Chicago, 1890; aged 69; formerly a Fellow of the American Medical Association; died at his home, February 22, from acute parenchymatous nephritis.

JOHN HALE MANNON, M. D., Kewanee, Ill.; Rush Medical College, 1880; aged 67; a practitioner at Kewanee over 38 years and a member of the Illinois State Medical Society; died at his home, March 7, from chronic nephritis.

GEORGE MORTIMER HILL, M. D., Chicago; Hahnemann Medical College, Chicago, 1897; aged 46; professor of theory and practice of medicine in his alma mater; died in his apartment in the Hyde Park Hotel, February 10, from heart disease.

RUFUS A. DUMARS, M. D., Peoria, Ill.; Louisville Medical College, 1876; University of Pennsylvania, Philadelphia, 1877; aged 68; a member of the Illinois State Medical Society; died in St. Francis' Hospital, Peoria, February 1, from cholelithiasis.

LUTHER TITUS PALMQUIST, M. D., Chicago; Barnes Medical College, St. Louis, 1911; aged 37; formerly a Fellow of the American Medical Association; formerly a practitioner of Sioux City, Iowa; died at his home, March 7, from tuberculosis.

ARTHUR BARRETT EUSTACE, M. D., Chicago; Northwestern University Medical School, Chicago, 1907; aged 32; formerly a Fellow of the American Medical Association, and instructor in surgery in his alma mater; died in Phoenix, Ariz., February 19, from tuberculosis.

J. MARSHALL ELDER, M. D., Franklin, Ill.; Physio-Medical College of Indiana, Indianapolis, 1896; aged 46; a Fellow of the American Medical Association; a member of the American Association of Physio-Medical Physicians and Surgeons; died at the Passavant Hospital, Jacksonville, Ill., March 1, following an operation.

JOHN PATRICK GRIMES, M. D., Menard, Ill.; University of Illinois, College of Medicine, 1899; aged 42; a member of the Illinois State Medical Society; for several years a member of the staff of St. Joseph's Hospital; physician and surgeon to the Southern Illinois Penitentiary, Menard; died at St. Andrew's Hospital, Murphysboro, Ill., March 14, from cerebral meningitis.

RICHARD HUNT BROWN, M. D., Chicago; College of Physicians and Surgeons, Chicago, 1891; aged 55; a Fellow of the American Medical Association; associate professor of clinical laryngology, rhinology and otology in his alma mater; attending surgeon to the West Side Dispensary, ear, nose and throat department; a specialist on diseases of the ear, nose and throat; formerly professor of toxicology and materia medica in Northwestern College of Pharmacy; fell unconscious afterward swimming in the Central Y. M. C. A. pool, March 12, and died shortly afterward, from heart disease, it is believed.